Canon

PUB. DIE-0343-000Axc

HD Camcorder

Instruction Manual

LEGRIA
HF R16

LEGRIA
HF R17

LEGRIA
HF R18

LEGRIA
HF R106

PAL

PictBridge HDMI AVCHD

Important Usage Instructions

WARNING!

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING!

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK AND TO REDUCE ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

CAUTION:
DISCONNECT THE MAINS PLUG FROM THE SUPPLY SOCKET WHEN NOT IN USE.

To reduce the risk of electric shock, do not expose this product to dripping or splashing.

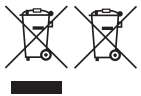
The Mains plug is used as the disconnect device. The Mains plug shall remain readily operable to disconnect the plug in case of an accident.

While using the compact power adapter, do not wrap it or cover it with a piece of cloth, and do not place it in confined narrow spaces. Heat may build up, the plastic case may deform and it could result in electric shock or fire.

CA-590E identification plate is located on the bottom.

Using any device other than the Compact Power Adapter CA-590E may damage the camcorder.

European Union (and EEA) only.



These symbols indicate that this product is not to be disposed of with your household waste, according to the WEEE Directive (2002/96/EC), the Battery Directive (2006/66/EC) and/or your national laws implementing those Directives.

This product should be handed over to a designated collection point, e.g., on an authorized one-for-one basis when you buy a new similar product or to an authorized collection site for recycling waste electrical and electronic equipment (EEE) and batteries and accumulators. Improper handling of this type of waste could have a possible impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. Your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources.

For more information about the recycling of this product, please contact your local city office, waste authority, approved scheme or your household waste disposal service or visit www.canon-europe.com/environment.

(EEA: Norway, Iceland and Liechtenstein)

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- This product is licensed under AT&T patents for the MPEG-4 standard and may be used for encoding MPEG-4 compliant video and/or decoding MPEG-4 compliant video that was encoded only (1) for a personal and non-commercial purpose or (2) by a video provider licensed under the AT&T patents to provide MPEG-4 compliant video. No license is granted or implied for any other use for MPEG-4 standard.

Exciting Features and New Functions

FULL HD 1080[1] HD CMOS HD SENSOR High-Definition Video

Your camcorder's high-definition image sensor (HD CMOS) captures video at a resolution of 1,920 x 1,080 pixels[2]. Videos are then recorded in the memory in high definition, using AVCHD specifications[3]. With your new HD camcorder, capturing the special moments in your life with amazing image quality and in lifelike vibrant colors is easy and fun!

HFR18/HFR17/HFR16 Dual Flash Memory

You can record in the built-in memory or on commercially available memory cards (🕮 35).

Pre-recording

(🕮 57)

When pre-recording is activated, the camcorder starts recording video continuously into a temporary 3-second memory. When you press the START/STOP button, the scene recorded will have started 3 seconds before you started shooting.

[1] "Full HD 1080" refers to Canon camcorders compliant with high-definition video composed of 1,080 vertical pixels (scanning lines).

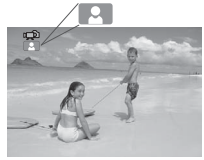
[2] Video is recorded at this resolution only when the recording mode is set to FXP mode. In other recording modes, the picture is recorded at 1,440 x 1,080 pixels.

[3] AVCHD is a standard for recording high-definition video. With AVCHD specifications, the video signal is recorded using MPEG-4 AVC/H.264 compression and the audio signal is recorded in Dolby Digital.

Smart AUTO

(📖 24)

Smart AUTO automatically selects the best settings for the scene you want to shoot. You get spectacular recordings every time without worrying about settings.



Just point the camcorder and it will automatically select the best settings for your subject

Video Snapshot

(📖 56)

Shoot or capture short scenes and arrange them into a video clip set to your favorite background music.

Face Detection

(📖 60)

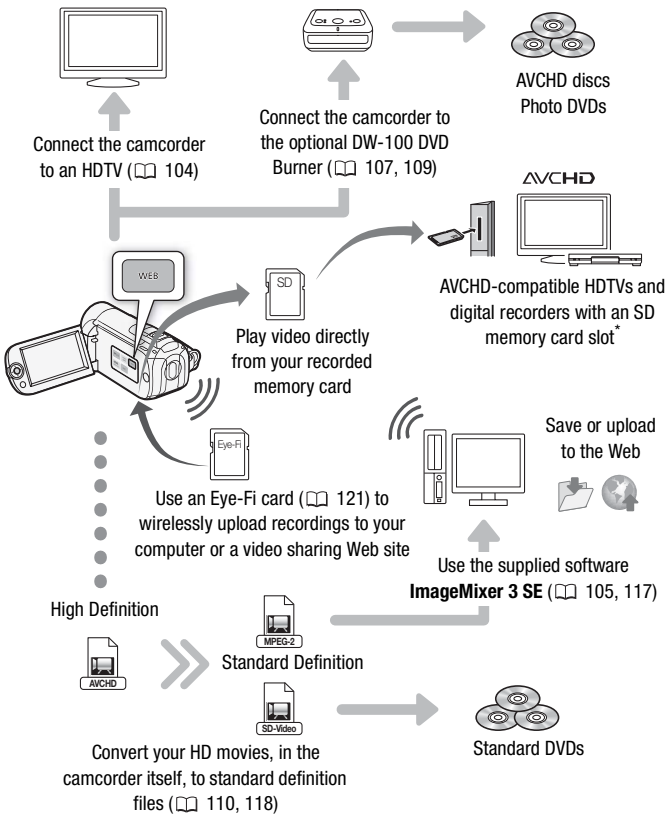
The camcorder automatically detects people's faces and adjusts the focus and other settings accordingly for beautiful results.

Image Stabilization

(📖 127)

Dynamic IS compensates for camcorder shake when you shoot video while walking. This gives you more freedom and mobility when recording movies.

Enjoying your Recordings on Other Devices


Connect the camcorder to an HDTV (📖 104)
Connect the camcorder to the optional DW-100 DVD Burner (📖 107, 109)
AVCHD discs
Photo DVDs
AVCHD
AVCHD-compatible HDTVs and digital recorders with an SD memory card slot*
WEB
SD
Play video directly from your recorded memory card
Eye-Fi
Use an Eye-Fi card (📖 121) to wirelessly upload recordings to your computer or a video sharing Web site
Save or upload to the Web
Use the supplied software **ImageMixer 3 SE** (📖 105, 117)
High Definition
AVCHD
MPEG-2
Standard Definition
SD-Video
Convert your HD movies, in the camcorder itself, to standard definition files (📖 110, 118)
Standard DVDs

* Refer to the instruction manual of the device. Depending on the device used, correct playback may not be possible even if the device is AVCHD-compatible. In such case, play back the recordings on the memory card using the camcorder.

Table of contents

■ Introduction

4 Exciting Features and New Functions
11 About this Manual

13 Getting to Know the Camcorder
13 Supplied Accessories and CD-ROMs
15 Names of Parts

■ Preparations

18 Getting Started
18 Charging the Battery Pack
21 Preparing the Accessories
22 Adjusting the Position and Brightness of the LCD Screen

24 Basic Operation of the Camcorder
24 Operating Modes
27 Joystick and Joystick Guide
28 Using the Menus

30 First Time Settings
30 Setting the Date and Time
31 Changing the Language
31 Changing the Time Zone

32 Using a Memory Card
32 Memory Cards Compatible for Use with the Camcorder
34 Inserting and Removing a Memory Card
35 HFR18/HFR17/HFR16 Selecting the Memory for the Recordings
36 Initializing the Built-in Memory (HFR18/HFR17/HFR16 only) or Memory Card

■ Video

38 Basic Recording
38 Shooting Video
39 Selecting the Video Quality (Recording Mode)
40 Zooming
41 Quick Start Function

43 Basic Playback
43 Playing Back the Video
45 Selecting what Recordings to Play Back
47 Searching for Scenes
50 Pre-selecting Recordings from the Index Screen
51 Deleting Scenes

53 Advanced Functions
53 Programmed AE and Special Scene Recording Programs
55 Cinema Mode: Giving a Cinematic Look to Your Recordings
56 Video Snapshot
57 Pre-recording Function
57 Self Timer
58 Manual Exposure Adjustment
59 Manual Focus Adjustment
60 Face Detection
61 White Balance
63 Image Effects
63 Digital Effects
65 On-Screen Displays and Data Code
66 Audio Recording Level
67 Selecting the Playback Starting Point

70 Scene and Playlist Operations
70 Playing Back Recordings Set to Background Music
72 Dividing Scenes
73 Editing the Playlist: Adding, Deleting, Moving and Playing Back
76 Capturing Video Snapshot Scenes from a Movie
77 HFR18/HFR17/HFR16 Copying Scenes to a Memory Card

■ Photos

80 Basic Recording
80 Taking Photos
81 Selecting Photo Size and Quality

83 Basic Playback
83 Viewing Photos
84 Deleting Photos
86 Magnifying Photos during Playback

87 Additional Functions
87 Slideshow
88 Rotating Photos
88 Histogram Display
89 Capturing Photos from a Movie
90 Protecting Photos
91 HFR18/HFR17/HFR16 Copying Photos to a Memory Card

94 Printing Photos
94 Printing Photos (Direct Print)
97 Print Orders

■ External Connections

100 Terminals on the Camcorder
101 Connection Diagrams
104 Playback on a TV Screen

105 Saving and Sharing Your Recordings
105 Saving Recordings on a Computer
107 Saving Movies onto High-Definition Discs (AVCHD/Blu-ray Discs)
109 HFR18/HFR17/HFR16 Saving Movies onto Standard-Definition Discs (DVD)
114 Creating Photo DVDs
115 Playing Back Discs Using the DW-100 DVD Burner
116 Copying Your Recordings to an External Video Recorder
117 Uploading Movies to Video Sharing Web Sites

■ Additional Information

123 Appendix: Menu Options Lists
123 FUNC. Menu
126 Setup Menus
136 Onscreen Icons and Displays

140 Trouble?
140 Troubleshooting
146 List of Messages

156 Do's and Don'ts
156 Handling Precautions
160 Maintenance/Others
161 Using the Camcorder Abroad

162 General Information
162 Accessories
163 Optional Accessories
166 Specifications
170 Index

About this Manual

Thank you for purchasing the Canon LEGRIA HF R18 / LEGRIA HF R17 / LEGRIA HF R16 / LEGRIA HF R106. Please read this manual carefully before you use the camcorder and retain it for future reference. Should your camcorder fail to operate correctly, refer to *Troubleshooting* (📖 140).

Conventions Used in this Manual

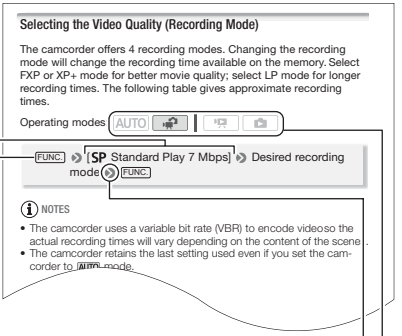
- IMPORTANT: Precautions related to the camcorder's operation.
- NOTES: Additional topics that complement the basic operating procedures.
- POINTS TO CHECK: Restrictions or requirements regarding the function described.
- 📖: Reference page number within this manual.

To complete some operations you will need to refer also to other instruction manuals. This will be indicated with the following icons:

PHOTO Refer to the 'Photo Application' instruction manual, included as a PDF file in the supplied Camcorder Supplemental Disc.

DW-100 Refer to the instruction manual of the optional DW-100 DVD Burner.

- HFR18: Text that applies only to the model(s) shown in the icon.
- The following terms are used in this manual:
  When not specified as "memory card" or "built-in memory", the term "memory" by itself refers to both.
  "Scene" refers to one movie unit from the point you press the START/STOP button to start recording until you press again to pause the recording.
- The photos included in this manual are simulated pictures taken with a still camera. Unless indicated otherwise, illustrations and menu icons refer to the HFR18.


Selecting the Video Quality (Recording Mode)
The camcorder offers 4 recording modes. Changing the recording mode will change the recording time available on the memory. Select FXP or XP+ mode for better movie quality; select LP mode for longer recording times. The following table gives approximate recording times.
Operating modes
AUTO
FUNC.
[SP Standard Play 7 Mbps]
Desired recording mode
FUNC.
NOTES
• The camcorder uses a variable bit rate (VBR) to encode videoso the actual recording times will vary depending on the content of the scene.
• The camcorder retains the last setting used even if you set the camcorder to AUTO mode.

Brackets [ ] are used to refer to menu options as they are displayed on screen.

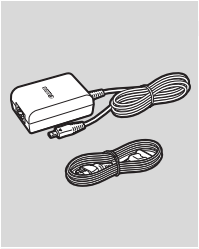
The names of most buttons and switches are indicated within a "button" frame.
For example FUNC..

The ▶ arrow is used to abbreviate menu selections. For a detailed explanation on how to use the menus, refer to *Using the Menus* (📖 28). For a concise summary of all available menu options and settings, refer to the appendix *Menu Options Lists* (📖 123).

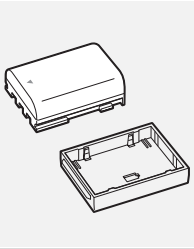
indicates that a function is available in the operating mode indicated and indicates that the function is not available. For a detailed explanation refer to *Operating Modes* (📖 24).

Supplied Accessories and CD-ROMs

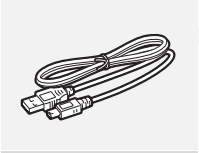
The following accessories are supplied with the camcorder:



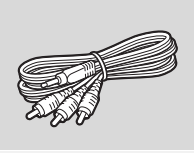
▶CA-590E Compact Power Adapter (incl. power cord)



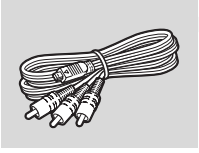
BP-2L5 Battery Pack◀



▶IFC-300PCU USB Cable



STV-250N Stereo Video Cable◀
Yellow • Red • White plugs



▶CTC-100/S Component Cable
Red • Green • Blue plugs

Quick Guide◀

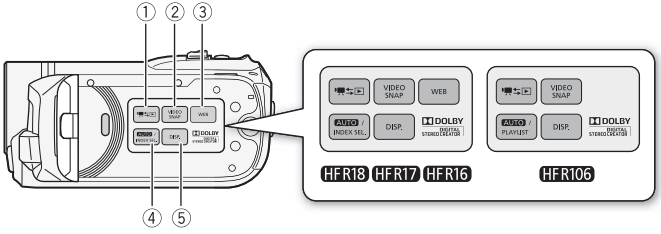
The following CD-ROMs and software are supplied with the camcorder:

- **PIXELA Application - Disc 1** CD-ROM* and 'PIXELA Applications' Installation Guide
  - ImageMixer 3 SE Transfer Utilities - Software for saving and transferring movies and music files you can use as background music.
- **PIXELA Application - Disc 2** CD-ROM*
  - ImageMixer 3 SE Video Tools - Software for managing, editing, and playing back movies.
- **Instruction Manual/Photo Applications Ver.34.0*/Music Data** CD-ROM (referred to in this manual as "Camcorder Supplemental Disc")
  - Instruction Manual - The full-version instruction manual of the camcorder (this PDF file).
  - Photo Application - Software for saving, managing, and printing photos.
  - Music data - Music files that can be used as background music during playback. These music files are for exclusive use with the supplied software **ImageMixer 3 SE**. The disc cannot be played back on CD players. For more details, refer to 'ImageMixer 3 SE Software Guide'.

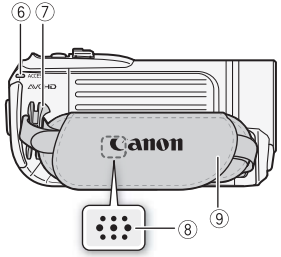
* The CD-ROM includes the instruction manual of the software (on PDF file).

Names of Parts

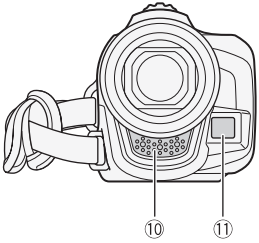
Left side view



Right side view

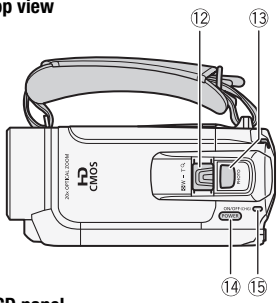


Front view

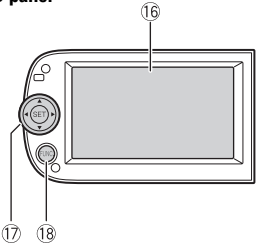


① (camera/play) button (📖 26)
② VIDEO SNAP (video snapshot) button (📖 56)
③ HFR18/HFR17/HFR16 WEB button (📖 117)
④ AUTO button (📖 24)/ HFR18/HFR17/HFR16 INDEX SEL. (index selection) button (📖 45)/ HFR106 PLAYLIST button (📖 45)
⑤ DISP. (on-screen display) button (📖 65)
⑥ ACCESS indicator (📖 38, 80)
⑦ Strap mount (📖 21)
⑧ Speaker (📖 43)
⑨ Grip belt (📖 21)
⑩ Stereo microphone (📖 66)
⑪ Instant AF sensor (📖 127)

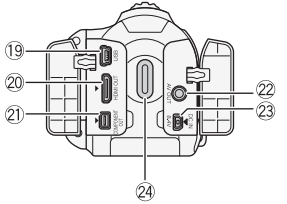
Top view



LCD panel

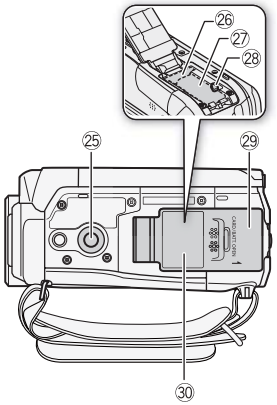


Back view

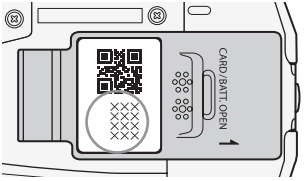


⑫ Zoom lever (🕮 40)
⑬ PHOTO button (🕮 80)
⑭ POWER button
⑮ ON/OFF (CHG) (charge) indicator:
Green – On
Orange – Standby (🕮 41)
Red – Charging (🕮 18)
⑯ LCD screen (🕮 22)
⑰ Joystick (🕮 27)
⑱ FUNC. button (🕮 28, 123)
⑲ USB terminal (🕮 100, 103)
⑳ HDMI OUT terminal (🕮 100, 101)
㉑ COMPONENT OUT terminal (🕮 100, 102)
㉒ AV OUT terminal (🕮 100, 102)
㉓ DC IN terminal (🕮 18)
㉔ START/STOP button (🕮 38)

Bottom view



㉕ Tripod socket (📖 156)
㉖ Memory card slot (📖 34)
㉗ Battery compartment
㉘ Battery release latch
㉙ Battery compartment cover/Memory card slot cover
㉚ **Serial number**
The serial number label is located on the battery compartment cover.



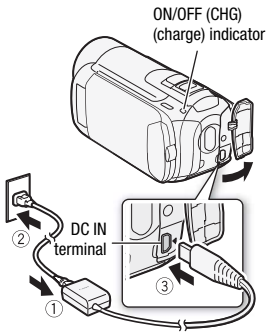
Preparations

This chapter describes basic operations, such as navigating the menus, and first time settings to help you learn more about your camcorder.

Getting Started

Charging the Battery Pack

The camcorder can be powered with a battery pack or directly using the compact power adapter. Charge the battery pack before use.
For approximate charging times and recording/playback times with a fully charged battery pack, refer to the tables on pages 163-164.

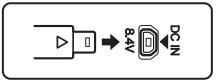


1 **Connect the power cord to the compact power adapter.**

2 **Plug the compact power adapter into a power outlet.**

3 **Connect the compact power adapter to the camcorder's DC IN terminal.**

- When connecting the compact power adapter's cable to the camcorder (③), make sure to align the triangle marks on the cable's connector and on the camcorder's terminal (▶ ◀).



4 **Slide the battery compartment cover away from the lens and open it.**

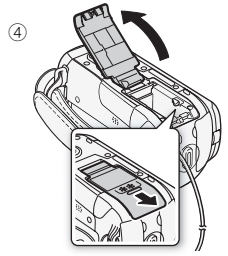
5 **Remove the battery terminal cover from the battery pack.**

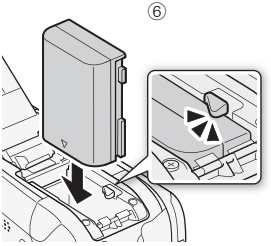
6 **Insert the battery pack all the way into the compartment and press gently until it clicks.**

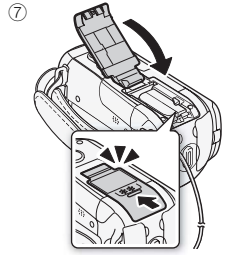
7 **Close the cover and slide it toward the lens until you hear a click.**

8 **Charging will start when the camcorder is turned off.**

- If the camcorder was on, the green ON/OFF (CHG) indicator will go out when you turn off the camcorder. After a moment, the ON/OFF (CHG) indicator will start flashing in red (battery pack charging). The red ON/OFF (CHG) indicator will go out when the battery pack is fully charged.
- If the indicator flashes quickly, refer to *Troubleshooting* (🕮 140).

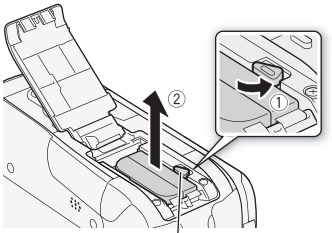






To remove the battery pack

1 Slide the battery compartment cover away from the lens and open it.
2 Press the battery release latch and pull out the battery pack.
3 Close the cover and slide it toward the lens until you hear a click.



IMPORTANT

- Turn off the camcorder before connecting or disconnecting the compact power adapter. After pressing POWER to turn off the camcorder, important data is updated in the memory. Be sure to wait until the green ON/OFF (CHG) indicator goes out.
- The first time you use a battery pack, fully charge it and then use the camcorder until the battery pack is completely exhausted.
- Do not connect to the camcorder's DC IN terminal or to the compact power adapter any electrical equipment that is not expressly recommended for use with this camcorder.
- To prevent equipment breakdowns and excessive heating, do not connect the supplied compact power adapter to voltage converters for overseas travels or special power sources such as those on aircraft and ships, DC-AC inverters, etc.

NOTES

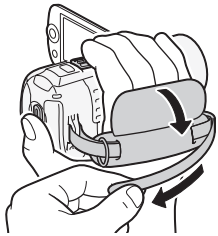
- The battery pack will be charged only when the camcorder is off.
- We recommend charging the battery pack in temperatures between 10 °C and 30 °C. Outside the temperature range of 0 °C to 40 °C, charging will not start.
- If remaining battery time is an issue, you can power the camcorder using the compact power adapter so the battery pack will not be consumed.
- Charged battery packs continue to discharge naturally. Therefore, charge them on the day of use, or the day before, to ensure a full charge.

- We recommend that you prepare battery packs to last 2 to 3 times longer than you think you might need.

Preparing the Accessories

Fasten the grip belt.

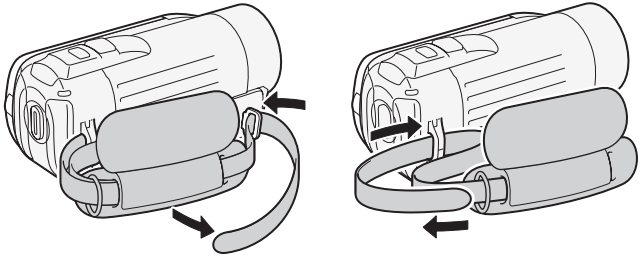
Adjust the grip belt so that you can reach the zoom lever with your index finger, and the START/STOP button with your thumb.



To remove the grip belt

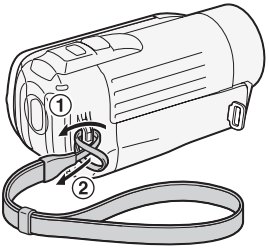
1 **Lift the padded handgrip's flap and detach the strap from the Velcro pad.**

2 **Pull the strap to remove it first from the front bracket on the camcorder, then to unthread it from the handgrip and finally to remove it from the rear bracket on the camcorder.**



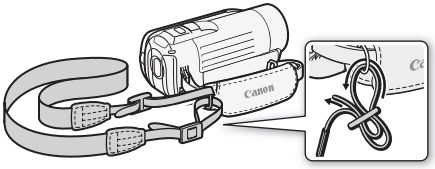
To attach an optional wrist strap

Pass the attaching end of the wrist strap through the rear bracket on the camcorder, thread the wrist strap through the loop and fasten.
You can also attach the wrist strap to the strap mount on the grip belt to use both for extra convenience and protection.



To attach an optional shoulder strap

Pass the ends of the shoulder strap through the strap mount on the grip belt and adjust the length of the strap.

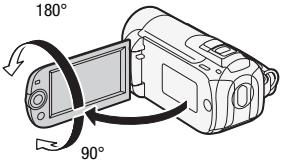


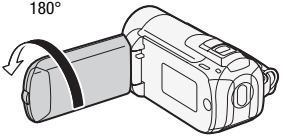
Adjusting the Position and Brightness of the LCD Screen

Rotating the LCD Panel

Open the LCD panel 90 degrees.

- You can rotate the panel 90 degrees downward.
- You can rotate the panel 180 degrees toward the lens. Rotating the LCD panel 180 degrees can be useful when you wish to include yourself in the picture when recording with the self timer.





Subject can monitor the LCD screen

NOTES

- **About the LCD screen:** The screen is produced using extremely high-precision manufacturing techniques, with more than 99.99% of the pixels operating to specification. Less than 0.01% of the pixels may occasionally misfire or appear as black, red, blue or green dots. This has no effect on the recorded image and does not constitute a malfunction.

LCD Backlight

When recording in bright places it may be difficult to use the LCD screen. Turn on the LCD backlight to make it brighter.

With the camcorder on, hold DISP. pressed down for more than 2 seconds.

- Repeat this action to switch the LCD backlight between off (normal) and on (bright).
- If [LCD Screen Dimmer] is set to [ON On], pressing DISP. for more than 2 seconds will turn off the screen dimmer and return the LCD screen to its previous brightness setting.

NOTES

- The LCD backlight does not affect the brightness of the recordings.
- Using the bright setting will shorten the effective usage time of the battery pack.
- You can further adjust the brightness of the LCD screen with the [LCD Brightness] setting, or dim it with the [LCD Screen Dimmer] setting to use in places where the light from the LCD screen can be a nuisance.

Operating Modes

Recording

The camcorder offers two basic modes for recording video and photos: Smart AUTO (AUTO) mode for beginners or if you just prefer not to bother with detailed camcorder settings, and flexible recording ( ) mode, which lets you change the camcorder's settings to your preference. Press the AUTO button to switch the camcorder to AUTO mode and press the button again to switch back to mode. In either mode, you can record movies by pressing START/STOP or take photos by pressing PHOTO.

Operating mode	Onscreen icon	Operation
AUTO	AUTO *	Easy recording of movies and photos.
		Recording of movies and photos while enjoying full access to the menus and advanced functions.

* The mode icon displayed will change according to the optimal mode selected by the Smart AUTO function.

About the Smart AUTO mode

- Only the following buttons/functions are available in this mode.
  - START/STOP for recording movies
  - PHOTO for recording photos
  - Zoom lever
  - Quick Start (41)
  - VIDEO SNAP for video snapshot (56)

- When shooting in AUTO mode, the camcorder will automatically detect certain characteristics of the subject, background, lighting conditions, etc. It will then adjust various settings (focus, exposure, color, image stabilization, image quality, among others), selecting the best settings for the scene you want to shoot. The Smart AUTO mode icon will change to one of the following icons.

Smart AUTO icons

Background → (color of the icon) Subject ↓	Bright (grey)	Blue skies (light blue)	Vivid colors (green/red)	Sunsets (orange)
People (stationary)	( )	( )	( )	–
People (moving)	( )	( )	( )	–
Subjects other than people, such as landscapes	AUTO ( )	AUTO ( )	AUTO ( )	
Close objects	( )	( )	( )	–

The icon in parentheses appears under backlight conditions.

Background → (color of the icon) Subject ↓	Dark (dark blue)		
		Spotlight	Night scene
People (stationary)		–	–
People (moving)		–	–
Subjects other than people, such as landscapes	AUTO		
Close objects		–	–

NOTES

- In AUTO mode, menus cannot be accessed but the following settings can be changed in advance.
  - Recording mode of movies
  - Size/quality of photos
  - HFR18/HFR17/HFR16 Your selection of recording media for movies/photos
  - Video snapshot length
  - Auto slow shutter
  - All settings under the setup menu's [wrench], [wrench] and [gear] tabs.
- Even in flexible recording mode, the camcorder can help you with the settings. For example, you can use the Special Scene recording programs (📖 53) to set at once all the optimal settings to match special recording conditions.
- Under certain conditions, the Smart AUTO icon that appears on the screen may not match the actual scene. Especially when shooting against orange or blue backgrounds, the Sunset or one of the Blue skies icons may appear and the colors may not look natural. In such case, we recommend recording in [P Programmed AE] mode (📖 53).

Playback

Press the [camera/play] button to switch the camcorder between camera (recording) mode and playback mode. You can press [camera/play] when the camcorder is off to turn it on directly in playback mode.

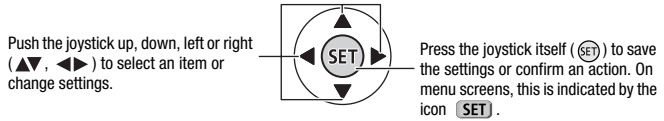
Operating mode	Onscreen icon	Operation	
[movie]	[movie]	Press [camera/play]	Playing back movies.
[photo]	[photo]		Viewing photos.

NOTES

- HFR18/HFR17/HFR16 When switching to a playback mode, the memory selected for playback will be the same currently used for recording.

Joystick and Joystick Guide

Use the joystick to operate the camcorder's menus.


Push the joystick up, down, left or right (▲▼, ◀▶) to select an item or change settings.
SET
Press the joystick itself (SET) to save the settings or confirm an action. On menu screens, this is indicated by the icon SET.

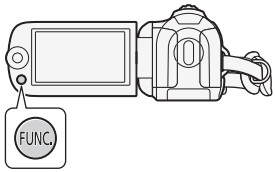
If the joystick guide does not appear on the screen, press SET or push the joystick (▲▼, ◀▶) to display it. The functions that appear depend on the operating mode.

- or mode: Select (▲▼) a function and press SET to change the setting. With some functions, you will need to make further adjustments (◀▶).
- mode: First, select (▲▼) a "row" of functions; then, press SET to operate the function in the middle or push the joystick (◀ or ▶) to operate the function on the left or right, respectively.

The joystick guide will minimize after 2 seconds. When the joystick guide is minimized, you can still adjust or turn on/off the selected function; you can also maximize (▲) the joystick guide to select another function or hide (▼) it altogether.

Using the Menus

Many of the camcorder's functions can be adjusted from the menus that open after pressing FUNC.. In AUTO mode, menus cannot be accessed and, except in a few cases, most menu settings will return to their default values.
For details about the available menu options and settings, refer to the appendix *Menu Options Lists* (123).

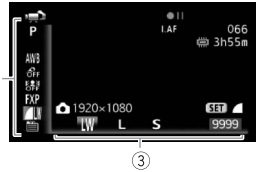


Selecting an Option from the FUNC. Menu

The following is an example of selecting a FUNC. menu option in mode. In playback modes, the operation varies depending on the function selected so refer to the relevant chapter as necessary.

1 **Press FUNC..**

2 **Select (▲▼) the icon of the function you want to change from the left side column.**
Menu items not available will appear grayed out.



3 **Select (◀▶) the desired setting from the available options at the bottom bar.**
- The selected option will be highlighted in orange.
- With some settings you will need to make further selections and/or press (SET). Follow the additional operation guides that will appear on the screen (such as the SET icon, small arrows, etc.).

4 **Press FUNC. to save the settings and close the menu.**
You can press FUNC. to close the menu at any time.

1 **Press** [FUNC.].

2 **Select (▲▼, ◀▶) [Menu] and press (SET) to open the setup menus.**

You can also hold [FUNC.] pressed down for more than 1 second to open directly the setup menus screen.

3 **Select (◀▶) the tab of the desired menu.**

4 **Select (▲▼) the setting you want to change and press (SET).**

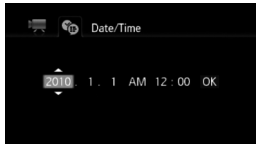
- The orange selection bar indicates the menu setting currently selected. Menu items not available appear grayed out.
- Move (▲▼) the orange selection bar to the tabs at the top of the screen to select a different menu (step 3).

5 **Select (▲▼, ◀▶) the desired option and press (SET) to save the setting.**

6 **Press** [FUNC.].

You can press [FUNC.] to close the menu at any time.

Setting the Date and Time



You will need to set the date and time of the camcorder before you can start using it. The [Date/Time] screen will appear automatically when the camcorder's clock is not set.
When the [Date/Time] screen appears, the year will be selected.

1 **Change (▲▼) the year and move (▶) to the month.**

2 **Change the rest of the fields (month, day, hour and minutes) in the same way.**

3 **Select (▶) [OK] and press (SET) to start the clock and close the setup screen.**

NOTES

- When you do not use the camcorder for about 3 months, the built-in rechargeable lithium battery may discharge completely and the date and time setting may be lost. In such case, recharge the built-in lithium battery (📖 159) and set the time zone, date and time again.
- The date appears in a year-month-day format only in the first setup screen. In subsequent screen displays the date and time will appear as day-month-year (for example, [1.Jan.2010 12:00 AM]). You can change the date format and the clock format (12/24 hours) with the [Date Format] setting.
- You can also change the date and time later on (not during the initial setup). Open the [Date/Time] screen from the setup menus:

FUNC. ▶ [Menu] ▶ ▶ [Date/Time]

Changing the Language

The default language of the camcorder is English. You can set it to one of 23 other languages.

Operating modes: AUTO

FUNC. ▸ [Menu] ▸ ▸ [Language] ▸ Desired language ▸ FUNC.

NOTES

- The displays SET and FUNC that appear in some menu screens refer to the name of buttons on the camcorder and will not change, regardless of the language selected.

Changing the Time Zone

Change the time zone to match your location. The default setting is Paris.

Operating modes: AUTO

To set the home time zone

FUNC. ▸ [Menu] ▸ ▸ [Time Zone/DST] ▸ * ▸ Your local time zone** ▸ FUNC.

* When you travel, select the icon and select the time zone that matches the local time at your destination.

** To adjust for daylight saving time, select the area name marked with a ☀.

Memory Cards Compatible for Use with the Camcorder

You can use commercially available Secure Digital (SD) cards with this camcorder. However, depending on the memory card, you may not be able to record movies. Refer to the table below.
As of May 2010, the movie recording function has been tested using SD/SDHC memory cards made by Panasonic, Toshiba and SanDisk, and SDXC memory cards made by Panasonic and Toshiba.

Memory card	Capacity	SD Speed Class	Recording movies
SD memory cards	64 MB or less	–	–
	128 MB or more	–	● *
		CLASS 2 CLASS 4 CLASS 6 CLASS 10	●
SDHC memory cards	Over 2 GB	CLASS 2 CLASS 4 CLASS 6 CLASS 10	●
SDXC memory cards	Over 32 GB	CLASS 4 CLASS 6 CLASS 10	●

* Depending on the memory card used, it may not be possible to record movies.

NOTES

- **About the SD Speed Class:** The SD Speed Class is a standard that indicates the minimum guaranteed data transfer speed of SD/SDHC/SDXC memory cards. When you buy a new memory card, look for the Speed Class logo on the package.
  We recommend using memory cards rated Speed Class 4, 6 or 10.

SDXC memory cards

As of May 2010, SDXC memory cards have been tested to work under Windows 7. For details on whether your computer's operating system is SDXC-compatible, check with your computer's manufacturer.

IMPORTANT

- If you use an SDXC memory card with a computer OS that is not SDXC-compatible, you may be prompted to format the memory card. In such case, **cancel the operation to prevent data loss**.
- To use an SDXC memory card with external devices, such as card readers or digital recorders, make sure the external device is SDXC-compatible.
- Using the optional DW-100 DVD Burner, discs cannot be created from recordings on an SDXC memory card. To create discs using the DW-100, make sure in advance that your recordings are in the built-in memory or on an SD or SDHC memory card.
  If you connect the optional DVD Burner while the index screen is showing the recordings on the SDXC memory card, the DVD Burner may not operate correctly. In that case, disconnect the USB cable and turn off the DVD Burner.
- After repeatedly recording, deleting and editing scenes (fragmented memory), it will take longer to write data on the memory and recording may stop. Save your recordings and initialize the memory.

Eye-Fi cards

This product is not guaranteed to support Eye-Fi card functions (including wireless transfer). In case of an issue with an Eye-Fi card, please check with the card manufacturer. Also note that an approval is required to use Eye-Fi cards in many countries or regions. Without approval, use of the card is not permitted. If it is unclear whether the card has been approved for use in the area, please check with the card manufacturer.

Inserting and Removing a Memory Card

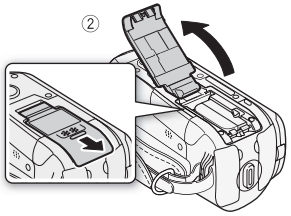
Make sure to initialize (📖 36) all memory cards before using them with this camcorder.

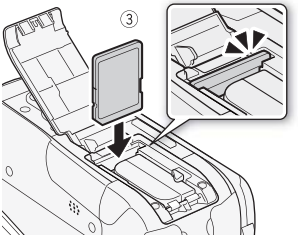
1 **Turn off the camcorder.**
Make sure the ON/OFF (CHG) indicator is off.

2 **Slide the memory card slot cover away from the lens and open it.**

3 **Insert the memory card straight, with the label facing away from the lens, all the way into the memory card slot until it clicks.**

4 **Close the cover and slide it toward the lens until you hear a click.**
Do not force the cover closed if the memory card is not correctly inserted.



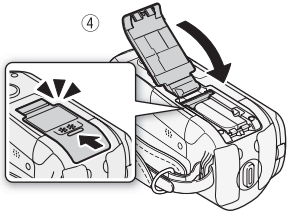


To remove the memory card

Push the memory card once to release it. When the memory card springs out, pull it all the way out.

IMPORTANT

- Memory cards have front and back sides that are not interchangeable. Inserting a memory card facing the wrong direction can cause a malfunction of the camcorder. Be sure to insert the memory card as described in step 3.



HFR18/HFR17/HFR16 Selecting the Memory for the Recordings

You can select to record your movies and photos in the built-in memory or on a memory card. The built-in memory is the default memory for recording both.

Operating modes: AUTO

POINTS TO CHECK

- Be sure you understand the information provided in *Eye-Fi cards* (📖 33) before using an Eye-Fi card.

FUNC. ▸ [Menu] ▸ ▸
[Rec Media for Movies] or [Rec Media for Photos] ▸
Select the built-in memory or memory card* ▸ FUNC.

* When selecting the memory, you can check the total, used and approximate available recording time/number of photos (estimated based on the recording mode (movies) or photo size/quality (photos) currently in use).

NOTES

- Select the built-in memory for recording movies if you intend to convert high-definition scenes to standard definition for Web upload (📖 117) or creating standard DVDs (📖 109).

Relay Recording

If the memory becomes full while you are recording a movie, relay recording allows the camcorder to automatically continue recording on to the memory card.

Operating modes: AUTO

1 Insert a memory card that does not contain any movies.

2 Activate relay recording.

FUNC. ▸ [Menu] ▸ [Camera] ▸ [Relay Recording] ▸ [ON On]* ▸ FUNC.

* The approximate available recording time will now reflect the combined space in the built-in memory and memory card.

NOTES

- Any of the following actions will deactivate the relay recording function.
  - Turning off the camcorder
  - Opening the memory card slot cover
  - Changing the camcorder's operating mode
  - Setting [Camera] ▸ [Rec Media for Movies] to [Mem. Card]

Initializing the Built-in Memory (HFR18/HFR17/HFR16 only) or Memory Card

Initialize memory cards when you use them with this camcorder for the first time. You can also initialize a memory card or the built-in memory (HFR18/HFR17/HFR16 only) to permanently delete all the recordings it contains.

HFR18/HFR17/HFR16 At the time of purchase, the built-in memory comes pre-initialized and contains music files for use as background music during playback.

Operating modes: AUTO

POINTS TO CHECK

- Power the camcorder using the compact power adapter before initializing the memory. While the initialization is in progress, do not disconnect the power source or turn off the camcorder.

HFR18/HFR17/HFR16

FUNC. ▸ [Menu] ▸ [Setup] ▸ [Initialize] ▸ [Built-in Mem.] or [Mem. Card] ▸ Initialization method ▸ [Yes]* ▸ [OK] ▸ FUNC.

HFR106

FUNC. ▸ [Menu] ▸ [Initialize SD] ▸ Initialization method ▸ [Yes]* ▸ [OK] ▸ FUNC.

* Press SET to cancel the complete initialization while it is in progress. All recordings will be erased and the memory can be used without any problem.

Options

[Quick Initialization] Clears the file allocation table but does not physically erase the stored data.

[Complete Initialization] Erases all data completely.

IMPORTANT

- Initializing the memory will permanently erase all recordings. Lost original recordings cannot be recovered. Make sure you save important recordings in advance using an external device (📖 105).
- Initializing a memory card will permanently erase any music files you may have transferred to the card. HFR18/HFR17/HFR16 The music files that come pre-installed in the built-in memory will be restored after it is initialized.
- Windows users: Use the supplied software **ImageMixer 3 SE** to transfer music files from the supplied Camcorder Supplemental Disc to a memory card connected to a computer again. For details, refer to the 'ImageMixer 3 SE Software Guide'.
- Mac OS users: Use the Finder to transfer music files from the [MUSIC] folder on the supplied Camcorder Supplemental Disc to a memory card connected to a computer after it is initialized. Refer to *About the music files* (📖 169) for the folder structure of the memory card.
- At the time of purchase, Eye-Fi cards contain the necessary network configuration software. Be sure to install the software and complete the required configuration setup before you initialize the Eye-Fi card prior to using it with this camcorder.

2 Video

This chapter covers functions related to shooting movies, including recording, playback, advanced functions and playlist and scene operations.

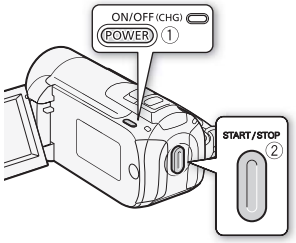
Basic Recording

Shooting Video

Operating modes: AUTO

1 **Turn on the camcorder.**
HFR18/HFR17/HFR16 By default, movies are recorded in the built-in memory. Alternatively, you can set the memory card as the recording media (📖 35).

2 **Press START/STOP to begin recording.**
Press START/STOP again to pause the recording.



When you have finished recording

1 Make sure that the ACCESS indicator is off.
2 Turn off the camcorder.
3 Close the LCD panel.

IMPORTANT

- Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss or damage to the memory.
  - Do not open the memory card slot cover.
  - Do not disconnect the power source or turn off the camcorder.
  - Do not change the camcorder's operating mode.

- Be sure to save your recordings regularly (📖 105), especially after making important recordings. Canon shall not be liable for any loss or corruption of data.

NOTES

- **About the Power Save mode:** If [⚙] ▸ [Power Saving Mode] is set to [ON On], the camcorder will shut off automatically to save power when it is powered by a battery pack and is left without any operation for 5 minutes. Press [POWER] to turn on the camcorder.
- When recording in bright places, it may be difficult to use the LCD screen. In such cases, you can turn on the LCD backlight (📖 23) or adjust the brightness of the LCD screen with the [⚙] ▸ [LCD Brightness] setting.

Selecting the Video Quality (Recording Mode)

The camcorder offers 4 recording modes. Changing the recording mode will change the recording time available on the memory. Select FXP or XP+ mode for better movie quality; select LP mode for longer recording times. The following table gives approximate recording times.

Operating modes: AUTO | 🎥 | 🎞 | 📷

[FUNC.] ▸ [SP Standard Play 7 Mbps] ▸ Desired recording mode ▸ [FUNC.]

NOTES

- The camcorder uses a variable bit rate (VBR) to encode video so the actual recording times will vary depending on the content of the scenes.
- The camcorder retains the last setting used even if you set the camcorder to [AUTO] mode.

Approximate recording times ♦ Default value

Recording mode → / Memory ↓	FXP[1]	XP+	SP♦	LP
4 GB memory card	30 min.	40 min.	1 hr. 10 min.	1 hr. 30 min.
HFR17/HFR16 Built-in memory[2]/8 GB memory card	1 hr.	1 hr. 25 min.	2 hr. 20 min.	3 hr.
16 GB memory card	2 hr. 5 min.	2 hr. 50 min.	4 hr. 45 min.	6 hr. 5 min.
HFR18 Built-in memory[2]/32 GB memory card	4 hr. 10 min.	5 hr. 45 min.	9 hr. 35 min.	12 hr. 15 min.

[1] Recorded in 1,920 x 1,080 resolution. Movies recorded using other recording modes are recorded in 1,440 x 1,080 resolution.
[2] HFR18/HFR17/HFR16 At the time of purchase, the built-in memory contains about 75 MB of music files.

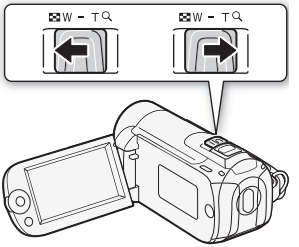
Zooming

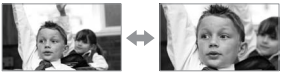
The camcorder offers optical (20x) and digital (HFR18/HFR16/HFR106: 400x, HFR17: 800x) zoom. You can turn on the digital zoom with the [Digital Zoom] setting.

Operating modes: AUTO

Move the zoom lever toward W (wide angle) to zoom out. Move it toward T (telephoto) to zoom in.

By default, the zoom lever operates at a variable speed – press gently for a slow zoom; press harder for faster zooms.





W Zoom out **T** Zoom in

NOTES

- Keep at least 1 m away from the subject. At full wide angle, you can focus on a subject as close as 1 cm.

- In [icon] mode, you can also set [icon] [Zoom Speed] to one of three constant speeds (3 is the fastest, 1 the slowest).
- When [Zoom Speed] is set to [VAR Variable], the zoom speed will be faster in record pause mode than when actually recording, except when pre-recording (📖 57) is activated.

Quick Start Function

When you close the LCD panel with the camcorder on, the camcorder enters the standby mode. In standby mode the camcorder consumes only about 1/3 the power used when recording, saving energy when you are using a battery pack. Additionally, when you open the LCD panel, the camcorder is ready to start recording in approximately 1 second*, allowing you to record the subject right away.

* The actual time required varies depending on the shooting conditions.

Operating modes: AUTO [icon] | [icon] [icon]

1 **With the camcorder on and in a recording mode, close the LCD panel.**

A beep will sound and the green ON/OFF (CHG) indicator will change to orange to indicate the camcorder entered standby mode.

2 **When you wish to resume recording, open the LCD panel.**

The ON/OFF (CHG) indicator turns back green and the camcorder is ready to record.

IMPORTANT

- Do not disconnect the power source during standby mode (while the ON/OFF (CHG) indicator is lit in orange).

NOTES

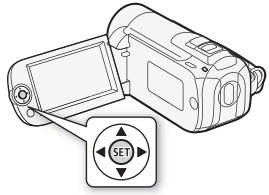
- The camcorder will not enter standby mode if the LCD panel is closed while the ACCESS indicator is on or flashing, while a menu is being displayed, or while the PHOTO button is pressed down halfway. The camcorder may also not enter standby mode if the LCD panel is closed while the memory card slot cover is open or when the battery charge is too low. Check that the ON/OFF (CHG) indicator changes to orange.

- The camcorder will shut off if left in standby mode for 10 minutes, regardless of the [Power Saving Mode] setting. Press POWER to turn on the camcorder.
- You can select the length of time until shut-off or turn off the Quick Start function altogether with the [Quick Start] setting.
- When the camcorder exits standby mode, it will return to the operating mode previously selected.

Playing Back the Video

Operating modes: AUTO

1 **Press [▶].**
- The original movies index screen will appear in most cases.
- If a photo appears in single photo view, move the zoom lever toward **W** to open the photo index screen. Switch to the original movies index screen (🕮 45).



2 **Move (▲▼, ◀▶) the selection frame to the scene you want to play back.**

When you have recorded a large number of scenes, you can display (▲▼) a slidebar below the scene thumbnails and browse (◀▶) through index pages; then, return (▲▼) to select the desired scene.

3 **Press (SET) to begin the playback.**

Playback will start from the scene selected and continue until the end of the last scene recorded.

To pause/stop the playback

1 During playback, open (▲) the joystick guide.

2 Select (▲▼) ❚❚ to pause the playback or ■ to stop the playback.

To adjust the volume

1 During playback, open (▲) the joystick guide.

2 Select (▲▼) the top row (🔊).

3 Adjust (◀▶) the volume.

IMPORTANT

- Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the power source or turn off the camcorder.
  - Do not change the camcorder's operating mode.
- You may not be able to play back with this camcorder movies recorded on a memory card using another device.

NOTES

- Depending on the recording conditions, you may notice brief stops in video or sound playback between scenes.

Special playback modes

To enter the special playback modes, use the joystick guide. There is no sound during the special playback modes.

Fast playback

Perform the following operation during normal playback. Repeat to increase the playback speed to approximately 5x → 15x → 60x the normal speed.

Open (▲) the joystick guide ❯ Select (▲▼) the bottom row ❯ Push the joystick (◀▶) toward ◀◀ or ▶▶.

Slow playback

Perform the following operation during playback pause. Repeat to increase the playback speed 1/8 → 1/4 the normal speed.

Open (▲) the joystick guide ❯ Select (▲▼) the bottom row ❯ Push the joystick (◀▶) toward ◀❙* or ❙▶.

* Slow reverse playback will look the same as continuous frame reverse.

Skipping scenes

Open (▲) the joystick guide ❯ Select (▲▼) the middle row ❯ Push the joystick (◀▶) toward ⏮* to skip to the beginning of the current scene or ⏭ to skip to the next scene.

* Push the joystick/press the button twice to skip to the beginning of the previous scene.

Ending special playback modes

During any special playback mode, press (SET). The camcorder will return to its initial mode (playback or playback pause).

ⓘ NOTES

- During some special playback modes, you may notice some anomalies (blocky video artifacts, banding, etc.) in the playback picture.
- The speed indicated on the screen is approximate.

Selecting what Recordings to Play Back

From the index screen, you can use the tabs on the top of the screen to select whether to play back your original movies or photos. You can also select the memory from which you want to play back your recordings (HFR18/HFR17/HFR16 only). In addition, you can switch to the index screens that contain scenes used by other functions in this camcorder, such as video snapshot and the playlist.

Operating modes: AUTO

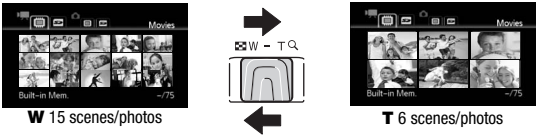
HFR18/HFR17/HFR16

1 **In the index screen, move (▲▼) the orange selection frame to the tabs on the top of the screen.**

2 **Select (◀▶) the tab corresponding to the recordings you want to play back.**

3 **Return (▲▼) to the index screen to select a scene or photo.**

By default, the index screen will show up to 6 items (scenes or photos). Move the zoom lever toward **W** to show up to 15 items per screen. Move it toward **T** to return to the default index screen display.



W 15 scenes/photos

T 6 scenes/photos

To open the video snapshot index screen

You can open an index screen that contains only your video snapshot scenes (🕮 56). In the original movies index screen, press VIDEO SNAP .

To open the playlist index screen

Open the playlist index screen to play back the scenes you added to the playlist (🕮 73). First, open the original movies index screen and then follow the procedure below.

HFR18/HFR17/HFR16
For scenes in the built-in memory: press INDEX SEL.
For scenes on the memory card: press INDEX SEL. and then select [Playlist].
HFR106
Press PLAYLIST.

To open the index screen for scenes converted into standard definition (HFR18/HFR17/HFR16 only)

You can also open the index screen for scenes converted into standard definition for Web upload (🕮 118) or DVD authoring (🕮 110). Open the original movies index screen on the memory card. Press INDEX SEL. and then select [For Web (MPEG-2)] or [For DVD (SD-VIDEO)].

[For DVD (SD-VIDEO)] index screen

NOTES

- When you open the original movies index screen on the memory card, [No scenes] will be displayed if there are no high-definition scenes on the memory card. However, you can still open the other index screens on the memory card.
- Special playback modes are not available for scenes converted to standard definition. Standard definition scenes can be played back only at normal speed.

Searching for Scenes

From the original movies index screen, you can search for recordings you made on a particular date (for example, to find all the movies you shot during a special event). You can also search for scenes in which people's faces were detected.

Operating modes: AUTO

Selecting from the Calendar Screen

1 Open the original movies index screen.

- HFR18/HFR17/HFR16 You can select the original movies in the built-in memory or on the memory card.
- You can press VIDEO SNAP to open the index screen for video snapshot scenes.

2 Open the calendar screen.

FUNC. ▸ [Scene Search] ▸ [Calendar Screen]

- The calendar screen appears.
- Dates that contain scenes (that is, movies were recorded on that date) appear in white. Dates without recordings appear in black.

3 Move (▲▼, ◀▶) the cursor to the desired date.

- When you move the cursor to a date displayed in white, a thumbnail showing a still image from the first scene recorded on that date will be displayed next to the calendar. Below it will appear the number of scenes recorded ( ) and the total recording time for the same day.
- You can select (▲▼) the year or month field and change (◀▶) the year or month to move faster between calendar months.

4 Press (SET) to return to the index screen.

The orange selection frame will appear on the first scene recorded on the selected date.

NOTES

- You can change on what day to start the week for the calendar display with the ▸ [Calendar Start Day] setting.
- You can press FUNC. to return to the index screen at any time.

Selecting from the List of Recordings

1 Open the original movies index screen.

- HFR18/HFR17/HFR16 You can select the original movies in the built-in memory or on the memory card.
- You can press VIDEO SNAP to open the index screen for video snapshot scenes.

2 Open the list of recordings.

FUNC. ▸ [Scene Search] ▸ [Date Selection]

- The list of recordings displays all dates in which recordings were made. An orange selection frame appears on the day.
- The thumbnail shows a still image from the first scene recorded on that day. Below it will appear the number of scenes recorded ( ) and the total recording time for the same day.

3 Select (◀▶) the date, month or year and move (▲▼) between recording dates.

4 After selecting the desired date, press (SET).
The index screen will appear with the selection frame on the first scene recorded on the selected date.

NOTES

- You can press FUNC. to return to the index screen at any time.

Selecting Only Scenes in which People's Faces Were Detected

If you recorded movies with the Face Detection function (📖 60) activated, the camcorder can narrow down the scenes shown in the index screen, leaving only those scenes where a face was detected. This function is not available from the index screen for video snapshot scenes.

1 Open the original movies index screen.
HFR18/HFR17/HFR16 You can select the original movies in the built-in memory or on the memory card.

2 Narrow down the scenes displayed in the index screen.

FUNC. ▸ [Scene Search] ▸ [Scenes with Faces]

- The index screen will display only those scenes that contain people's faces.

3 Select (▲▼, ◀▶) the scene you want to play back.

NOTES

- You can press FUNC. to return to the normal index screen at any time.

Pre-selecting Recordings from the Index Screen

You can select in advance a number of original movies or photos from the index screen in order to perform certain actions on them collectively, all at once.
mode: Delete, copy* or add the selected scenes to the playlist.
mode: Delete, copy* or protect the selected photos or mark all of them with print orders.

* HFR18/HFR17/HFR16 only

Operating modes: AUTO

1 Open the movie or photo index screen.

- mode: Move the zoom lever toward **W** to display the index screen.
- HFR18/HFR17/HFR16 You can select the original movies or photos in the built-in memory or on the memory card.
- You can press VIDEO SNAP to open the index screen for video snapshot scenes.

2 Open the selection screen.

FUNC. ▸ [☑ Select] ▸ [Individual Scenes] or [Individual Photos]

- The selection screen appears.

3 Move (▲▼, ◀▶) between the scenes or photos in the index screen and press (SET) to select an individual scene/photo.

- A checkmark ✓ will appear on the selected scenes/photos. Press (SET) again to remove the checkmark.
- Repeat this step to add all the scenes/photos you want to include in your selection (up to 100).

4 **Press [FUNC.] twice to close the menu.**

To cancel all the selections

[FUNC.] ▸ [☑ Select] ▸ [Remove All Selections] ▸ [Yes] ▸ [OK] ▸ [FUNC.]

NOTES

- The pre-selection of scenes/photos will be canceled if you turn off the camcorder or change the operating mode.
- Scenes in the playlist cannot be included in the pre-selection.

Deleting Scenes

You can delete those scenes that you are not interested in keeping. Deleting scenes allows you also to free up space on the memory. See also *Deleting Scenes from the Playlist* (📖 75).

Operating modes: AUTO

1 **Open the original movies index screen.**
   - HFR18/HFR17/HFR16 You can select the original movies in the built-in memory or on the memory card.
   - You can press [VIDEO SNAP] to open the index screen for video snapshot scenes.
   - To select in advance multiple scenes to delete, refer to *Pre-selecting Recordings from the Index Screen* (📖 50).
2 **Select (▲▼, ◀▶) the scene you want to delete, or a scene recorded on the date you want to delete.**

This step is not necessary to delete all scenes or previously selected scenes.

3 Delete the scene(s).

FUNC. ▸ [🗑 Delete] ▸ Desired option ▸ [Yes]* ▸ [OK] ▸ FUNC.

* If you selected any option other than [This Scene], you can press (SET) to interrupt the operation while it is in progress. Some scenes will be deleted nevertheless.

Options

[All Scenes] Deletes all the scenes.

[All Scenes (this date)] Deletes all the scenes recorded on the same day as the selected scene.

[This Scene] Deletes only the scene marked with the orange selection frame.

[Selected Scenes] Deletes all the scenes selected in advance (marked with a ✓ checkmark). Refer to *Pre-selecting Recordings from the Index Screen* (📖 50).

IMPORTANT

- Be careful when deleting original recordings. Once deleted, original scenes cannot be recovered.
- Save copies of important scenes before deleting them (📖 105).
- Observe the following precautions while the ACCESS indicator is on or flashing (while scenes are being deleted).
  - Do not open the memory card slot cover.
  - Do not disconnect the power source or turn off the camcorder.
  - Do not change the camcorder's operating mode.

NOTES

- Deleting a scene from the original index screen also deletes that scene from the playlist.
- To delete all movies and make all recordable space available again you may prefer to initialize the memory (📖 36).
- You may not be able to delete scenes recorded or edited using another device and then transferred to a memory card connected to a computer.

Programmed AE and Special Scene Recording Programs

The recording program determines how much control you have over the camcorder's recording-related settings. Select the [P Programmed AE] recording program to give you full control over functions like the white balance or image effects. Alternatively, give the camcorder more control by selecting a Special Scene recording program.

Operating modes: AUTO

Using [P Programmed AE]

When you use the [P Programmed AE] recording program, the camcorder automatically adjusts the aperture and shutter speed to obtain the optimal exposure for the subject.

FUNC. ▸ [P Programmed AE] ▸ FUNC.

Special Scene Recording Programs

Select a Special Scene recording program to easily make recordings in a variety of situations by letting the camcorder take control of various settings.

FUNC. ▸ [P Programmed AE] ▸ [Portrait] ▸ Press (SET) to display the Special Scene (SCN) recording programs ▸ Desired recording program ▸ FUNC.

Options (♦ Default value)

[Portrait]♦ The camcorder uses a large aperture, to achieve a sharp focus on the subject while blurring the background.

[Sports] To record sports scenes such as tennis or golf.

[Snow] To record in bright ski resorts without the subject being underexposed.

[Beach] To record on a sunny beach without the subject being underexposed.

[Sunset] To record sunsets in vibrant colors.

[Night Scene] To record nightscapes with lower noise.

[Low Light] To record in low-light situations.

[Spotlight] To record spotlit scenes.

[Fireworks] To record fireworks.

NOTES

- [Portrait]/[Sports]/[Snow]/[Beach]: The picture may not appear smooth during playback.
- [Portrait]: The blur effect of the background increases the more you zoom in (**T**).
- [Snow]/[Beach]: The subject may become overexposed on cloudy days or in shaded places. Check the image on the screen.
- [Low Light]:
  - Moving subjects may leave a trailing afterimage.
  - Picture quality may not be as good as in other modes.
  - White points may appear on the screen.
  - Autofocus may not work as well as in other modes. In such case, adjust the focus manually (for movies only).
- [Fireworks]:
  - To avoid camcorder blur (blur due to the camcorder moving) we recommend using a tripod.
  - When you take photos, slower shutter speeds are used so blur is more likely to occur. Stabilize the camcorder, for example, by mounting it on a tripod.

Cinema Mode: Giving a Cinematic Look to Your Recordings

Give your recordings a cinematic look by using the [Cine Mode] recording program. Combine this recording program with the 25 fps progressive frame rate [PF25 PF25] to get the enhanced effect of the 25p Cinema Mode.

Operating modes: AUTO

To set the [Cine Mode] recording program

FUNC. ▸ [P Programmed AE] ▸ [Cine Mode] ▸ FUNC.

To change the frame rate

FUNC. ▸ [Menu] ▸ [Video] ▸ [Frame Rate] ▸ [PF25] ▸ FUNC.

Video Snapshot

Record a series of short scenes. Play your video snapshot scenes set to your favorite music (🕮 70) to create your own fun music video. You will be surprised how by changing the background music, you can give your scenes an entirely new feel.

Operating modes: AUTO

1 **Press** VIDEO SNAP **.**

- A blue border appears on the screen.
- Press VIDEO SNAP again to return to flexible recording mode.

2 **Press** START/STOP **.**

- The camcorder records for about 4 seconds (the blue frame serves as a visual progress bar) and then automatically returns to record pause mode.
- You can change the length of video snapshot scenes with the [Video] ▸ [Video Snapshot Length] setting.
- When the camcorder stops recording, the screen will momentarily turn black as if a camera shutter had released.
- In index screens, video snapshot scenes are indicated with the ♪ mark.

NOTES

- Video snapshot is deactivated if the camcorder is switched to playback mode.

Pre-recording Function

The camcorder will start recording 3 seconds before you press START/STOP, ensuring you do not miss important shooting opportunities. This is especially useful when it is difficult to predict when to start recording.

Operating modes: AUTO

1 **Open (▲) the joystick guide.**

2 **Select (▲▼) [Pre REC] and press (SET).**
- appears.
- Press (SET) again to turn pre-recording off.

3 **Press START/STOP.**
The scene recorded in the memory will start 3 seconds before START/STOP was pressed.

NOTES

- While pre-recording is activated, the camcorder will not emit any notification sounds.
- The camcorder will not record the full 3 seconds prior to pressing START/STOP if the button was pressed within 3 seconds of having turned on pre-recording or having finished the previous recording.
- Any of the following actions will deactivate the pre-recording function.
  - Leaving the camcorder without any operation for 5 minutes.
  - Pressing FUNC., , AUTO or VIDEO SNAP.
  - Setting the camcorder to standby mode.

Self Timer

Operating modes: AUTO

FUNC. ▸ [Menu] ▸ ▸ [Self Timer] ▸ [On] ▸ FUNC.

appears.

For movies: Press START/STOP.

The camcorder starts recording after a 10-second countdown. The countdown appears on the screen.

For photos: Press PHOTO, first halfway to activate the autofocus and then fully.

The camcorder will record the photo after a 10-second countdown. The countdown appears on the screen.

NOTES

- Once the countdown has begun, any of the following actions will cancel the self timer.
  - Pressing START/STOP (when recording movies) or PHOTO fully (when recording photos).
  - Setting the camcorder to standby mode.
  - Changing the camcorder's operating mode.
  - Turning off the camcorder.

Manual Exposure Adjustment

At times, backlit subjects may appear too dark (underexposed) or subjects under very strong lights may appear too bright or glaring (overexposed). To correct this, you can manually adjust the exposure.

Operating modes: AUTO

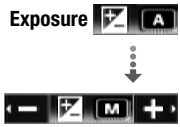
POINTS TO CHECK

- Select a recording program other than [✳ Fireworks].

Manual Exposure Adjustment

1 **Open (▲) the joystick guide.**

2 **Select (▲▼) [Exposure] and press (SET).**
- The current exposure is locked.
- The exposure adjustment indicator and the neutral value "±0" appear on the screen.



- The adjustment range and the length of the exposure adjustment indicator will vary depending on the initial brightness of the picture.
- If you operate the zoom, the brightness of the image may change.

3 Adjust the (◀▶) the brightness of the image as required, then hide (▼) the joystick guide.

- The exposure adjustment indicator will change to white and the selected exposure will be locked.
- During exposure lock, press (SET) twice to return the camcorder to automatic exposure.

NOTES

- If the recording program is changed during exposure lock, the camcorder will return to automatic exposure.

Manual Focus Adjustment

Autofocus may not work well on the following subjects. In such case, focus manually.

- Reflective surfaces
- Subjects with low contrast or without vertical lines
- Fast moving subjects
- Through wet windows
- Night scenes

Operating modes: AUTO |

* Available only for movies.

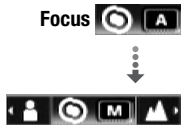
POINTS TO CHECK

- Adjust the zoom before you start the procedure.

1 Open (▲) the joystick guide.

2 Select (▲▼) [◉ Focus] and press (SET).
The current focus is locked and [MF] appears.

3 Push the joystick (◀) or (▶) once to verify if the image is focused.



- The center of the screen will be magnified to help you focus more easily. You can also turn off this function with the [Focus Assistance] setting.

4 Adjust (◄►) the focus as required.

- If you wish to focus on faraway subjects such as mountains or fireworks, push the joystick (►) toward ▲ and hold it pressed down until [MF] changes to ∞.

5 Push the joystick (▼) to hide the joystick guide.

- The selected focus will be locked.
- During focus lock, press (SET) twice to return the camcorder to autofocus.

Face Detection

The camcorder automatically detects people's faces and uses this information to select the optimal settings for beautiful videos and photos. When there are a number of people in the picture, one person (with the white face frame) will be determined to be the main subject. You can also select the main subject manually, so the camcorder optimizes the settings for the person selected.

Operating modes: AUTO

POINTS TO CHECK

- Select a recording program other than [Night Scene], [Low Light] or [Fireworks].

1 Open (▲) the joystick guide.

2 Select (▲▼) [Face Detection].

By default, face detection is activated (ON). If the function was turned off, press (SET) to turn it on.

To select the main subject

If there is more than one person in the picture, the camcorder will automatically select one person it determines is the main subject. The main subject is indicated by a white face detection frame and the camcorder will optimize the settings for that person. Other faces will have gray frames.

Select (◀▶) a different face to optimize the camcorder's settings for that person.

NOTES

- The camcorder may mistakenly detect the faces of non-human subjects. In such case, turn face detection off.
- In certain cases, faces may not be detected correctly. Typical examples include:
  - Faces extremely small, large, dark or bright in relation to the overall picture.
  - Faces turned to the side, at a diagonal or partially hidden.
- Face detection cannot be used when the shutter speed used is slower than 1/25 or when the digital zoom is activated at more than 80x zoom (dark blue area on the zoom bar).
- When face detection is activated, the slowest shutter speed used by the camcorder is 1/25.

White Balance

The white balance function helps you to accurately reproduce colors under different lighting conditions so that white objects will always look truly white in your recordings.

Operating modes: AUTO

POINTS TO CHECK

- Select a recording program other than the Special Scene recording programs.

FUNC. ▸ [AWB Automatic] ▸ Desired option* ▸ FUNC.

* When you select [Custom WB], do not press FUNC. and continue instead with the following procedure.

To set the custom white balance

1 Point the camcorder at a white object so it fills the whole screen and press SET.
When the adjustment is completed, stops flashing and stays on. The camcorder retains the custom setting even if you turn off the camcorder.

2 Press FUNC. to save the setting and close the menu.

Options (♦ Default value)

[AWB Automatic]♦ The camcorder automatically sets the white balance for natural looking colors.

[☀ Daylight] To record outdoors on a bright day.

[☀ Tungsten] To record under tungsten and tungsten-type (3-wavelength) fluorescent lighting.

[Custom WB] Use the custom white balance setting to make white subjects appear white under colored lighting.

NOTES

- **When you select the custom white balance:**
  - Set ▸ [Digital Zoom] to [OFF Off].
  - Reset the white balance when you change locations or the lighting or other conditions change.
  - Depending on the light source, may keep flashing. The result will still be better than with [AWB Automatic].
- Custom white balance may provide better results in the following cases:
  - Changing lighting conditions
  - Close-ups
  - Subjects in a single color (sky, sea or forest)
  - Under mercury lamps and certain types of fluorescent lights

Image Effects

You can use the image effects to change the color saturation and contrast to record movies and photos with special color effects.

Operating modes: AUTO

POINTS TO CHECK

- Select a recording program other than the Special Scene recording programs.

FUNC. ❯ [Image Effect Off] ❯ Desired option ❯ FUNC.

Options (♦ Default value)

- **[Image Effect Off]♦** Records with no image enhancing effects.
- **[Vivid]** Emphasizes the contrast and color saturation.
- **[Neutral]** Tones down the contrast and color saturation.
- **[Low Sharpening]** Records subjects with softened outlines.
- **[Soft Skin Detail]** Softens the details in the skin tone area for a more complimentary appearance. To obtain the best effect, use this setting when recording a person in close-up. Note that areas similar to the skin color may lack in detail.

Digital Effects

Operating modes: AUTO

FUNC. ❯ [Digital Effect Off] ❯ Desired fader/effect* ❯ FUNC.

The icon of the selected digital effect appears.

* You can preview the digital effect on the screen.

Options (♦ Default value)

[Digital Effect Off]♦ Select this setting when you do not intend to use the digital effects.

[F1 Fade Trigger], **[F2 Wipe]** Select one of the faders to begin or end a scene with a fade from or to a black screen.

[E1 Black & White]* Records movies and photos in black and white.

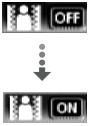
[E2 Sepia]* Records movies and photos in sepia tones for an "old" look.

* Only these digital effects are available for photos.

Applying the Selected Digital Effect

1 **Open (▲) the joystick guide.**

2 **Select (▲▼) [Digital Effects] and press (SET).**
- The icon of the selected digital effect turns green.
- Press (SET) again to deactivate the digital effect (its icon will turn white again).



To fade in/out

Activate the selected fader in record pause mode (●❚❚), then press START/STOP to start recording with a fade in. Activate the selected fader while recording (●), then press START/STOP to fade out and pause the recording.

To activate an effect

For movies: Activate the selected effect while recording or in record pause mode.
For photos: Activate the selected effect and then press PHOTO to record the photo.

NOTES

- When you apply a fader, not only the picture but also the sound will fade in or out. When you apply an effect, the sound will be recorded normally.

- Faders cannot be used when recording video snapshot scenes or when pre-recording is activated.

On-Screen Displays and Data Code

You can turn most on-screen displays on or off.

Operating modes: AUTO

Repeatedly press DISP. to turn the on-screen displays on/off in the following sequence:

mode:
- All displays on
- Most displays off*

mode:
- All displays on
- Data code only
- All displays off

mode:
- All displays on
- Regular displays only (removes the histogram and information icons)
- All displays off

* Pressing DISP. will turn off most of the icons and displays that appears automatically but will not remove onscreen displays that were turned on manually (for example, onscreen markers, the audio level meter or the joystick guide).

About the Data Code

With every scene or photo recorded, the camcorder keeps a data code (date/time of recording, information about the camera setup, etc.). In mode, this information is displayed on the bottom bar and as information icons; in mode, you can select the information to be displayed with the [Data Code] setting.

Audio Recording Level

You can adjust the audio recording level of the built-in microphone. You can display the audio level indicator while recording.

Operating modes: AUTO

Manual Adjustment of the Audio Recording Level

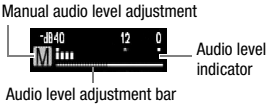
1 Open (▲) the joystick guide.

2 Select (▲▼) [Mic. Level] and press (SET).

- The manual adjustment icon M will appear to the left of the audio level indicator and the manual adjustment bar (orange) will appear below it.
- Press (SET) to return the camcorder to automatic audio recording levels.

3 Adjust (◀▶) the audio level as necessary.

As a guideline, adjust the audio recording level so that the audio level meter will go to the right of the -12 dB mark (yellow area) only occasionally.



4 Hide (▼) the joystick guide.

- The audio level selected will be locked and the audio level adjustment bar will turn white.
- Press (SET) twice to return the camcorder to automatic adjustment of the audio recording level.

To display the audio level indicator

Usually, the audio level indicator will be displayed only after activating the manual adjustment of the audio recording level. You can choose to display it also when the audio level is adjusted automatically.

FUNC. ▸ [Menu] ▸ ▸ [Audio Level Indicator] ▸ [On] ▸ FUNC.

NOTES

- When the audio level meter reaches the red point (0 dB mark), the sound may be distorted.
- If the audio level is too high and the sound gets distorted, activate the microphone attenuator with the [Microphone Attenuator] setting.

Selecting the Playback Starting Point

If you have a very long scene, you may want to start playing back the scene from a certain point. You can use the movie timeline to break the scene to segments at fixed time intervals ranging from 6 seconds to 6 minutes. If you recorded movies with the Face Detection function (📖 60) activated, you can display the scene divided into segments every time the camcorder registered a change in the main subject of the scene.

Operating modes: AUTO

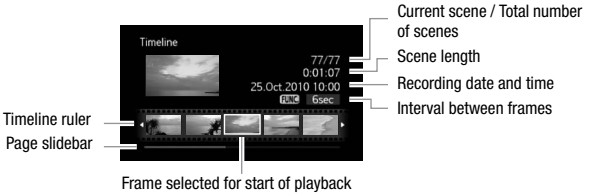
Movie Timeline

1 Open the original movies or playlist index screen.

- HFR18/HFR17/HFR16 You can select the original movies in the built-in memory or on the memory card.
- To open the playlist index screen from the original movies index screen:
  - HFR18/HFR17/HFR16 For scenes in the built-in memory, press INDEX SEL.. For scenes on the memory card, press INDEX SEL. and then select [Playlist].
  - HFR106 Press PLAYLIST.

2 Select (▲▼, ◀▶) the scene you want to view and press DISP..

- The [Timeline] screen appears. The large thumbnail will show the first frame of the scene. Below it, the timeline ruler shows frames taken from the scene at fixed intervals.
- Press DISP. again to return to the index screen.



3 Select (◀▶) the playback starting point from the timeline ruler.

4 Press (SET) to begin the playback.

To select another scene

Move (▲▼) the orange selection frame to the large thumbnail and select (◀▶) another scene.

To move between timeline ruler pages

Move (▲▼) the orange selection frame to the slidebar below the ruler and display (◀▶) the previous/next 5 frames in the scene.

To change the interval between frames

FUNC. ⟩ Desired interval ⟩ FUNC.

Changes in the Scene's Main Subject

1 Open the [Scenes with Faces] index screen.

- Refer to *Selecting Only Scenes in which People's Faces Were Detected* (📖 49).
- HF R18 / HF R17 / HF R16 You can select the original movies in the built-in memory or on the memory card.

2 Select (▲▼, ◀▶) the scene you want to view and press DISP..

- The [Timeline by Faces] screen appears. The large thumbnail shows the point at which a face was first detected. Below it, frames are taken from the scene every time the main subject detected by the camcorder changed.
- Press DISP. to return to the [Scenes with Faces] index screen.

3 Select (◀▶) the playback starting point from the segment ruler.

4 Press (SET) to begin the playback.

You can select another scene and move between segment ruler pages in the same way as in the movie timeline screen (🕮 67).

NOTES

- For a single scene, up to 100 segments/changes in main subject will appear in the [Timeline by Faces] screen.

Playing Back Recordings Set to Background Music

You can play back video snapshot scenes, scenes in the playlist and photo slideshows set to background music (instead of the original sound) using one of the supplied tracks.

Operating modes: AUTO

Using a Supplied Music Track as Background Music

The supplied Camcorder Supplemental Disc contains three music tracks you can use as background music. HFR18/HFR17/HFR16 These music tracks come pre-installed in the built-in memory.

POINTS TO CHECK

To play back scenes or a slideshow of photos recorded on a memory card, you will need to transfer, in advance, the music tracks to the memory card when it is connected to a computer. For details, refer to the 'ImageMixer 3 SE Software Guide'.

1 Open the playlist, video snapshot or photo index screen.

- HFR18/HFR17/HFR16 You can select the recordings in the built-in memory or on the memory card.
- To open the playlist index screen from the original movies index screen:
  - HFR18/HFR17/HFR16 For scenes in the built-in memory, press [INDEX SEL.]. For scenes on the memory card, press [INDEX SEL.] and then select [Playlist].
  - HFR106 Press [PLAYLIST].
- You can press [VIDEO SNAP] to open the index screen for video snapshot scenes.

2 Open the list of background music tracks.

[FUNC.] ▸ [♫ Select Music]

3 Select (▲▼) a music track and press [FUNC.] twice.

- You can press (SET) to listen to the track selected. Press (SET) to stop the playback.
- Select [Off] to play back scenes with their original sound or to play back slideshows without any music.

4 **Back in the index screen, select (▲▼, ◀▶) the recording from which to start playback.**

5 **Press (SET) to begin the playback set to the background music selected.**
- Use the joystick guide to stop the playback.
- Select [FUNC.] ▶ [Slideshow] to begin slideshow playback and press [FUNC.] to end it.

To delete a music track

After step 2 in the previous procedure, select the track you want to delete.

1 Select (▶) the icon and press (SET).

2 Select (▶) [Yes] and press (SET).

3 Press [FUNC.] twice.

IMPORTANT

- If you use copyrighted songs and music tracks in your video creations, remember that music under copyright may not be used without permission from the copyright holder, except for cases permitted under applicable laws, such as for personal use. Make sure to follow applicable laws when using music files.

NOTES

- You can also add to the playlist just the video snapshot scenes you want to watch and arrange their playback order.
- Initializing a memory card will permanently erase any music files you may have transferred to the card. The music files that come pre-installed in the built-in memory will be restored after it is initialized (HFR18/HFR17/HFR16 only).
- Windows users: Use the supplied software **ImageMixer 3 SE** to transfer music files from the supplied Camcorder Supplemental Disc to a memory card connected to a computer again. For details, refer to the 'ImageMixer 3 SE Software Guide'.

- Mac OS users: Use the Finder to transfer music files from the [MUSIC] folder on the supplied Camcorder Supplemental Disc to the memory card connected to a computer after it is initialized. Refer to *About the music files* (📖 169) for the folder structure of the memory card.
- HFR18/HFR17/HFR16 The Camcorder Supplemental Disc includes also extra music tracks that were not pre-installed in the built-in memory.
- When music files are copied to a memory card after repeatedly recording and deleting recordings (fragmented memory), the movies and background music track may not be played back correctly. In such case, we recommend saving your recordings on a computer (📖 105), initializing the memory card (📖 36), copying the music files and only then copying the video files back to the memory card when it is connected to a computer.
- If the connection is interrupted while transferring music files, it may not be possible to correctly play back those music tracks. Delete the music tracks from the memory, and transfer the music files again.

Dividing Scenes

You can divide scenes (original scenes only) in order to leave out the best parts and later cut out the rest.

Operating modes: AUTO

1 Open the original movies index screen.

HFR18/HFR17/HFR16 You can select the original movies in the built-in memory or on the memory card (📖 45).

2 Select (▲▼, ◀▶) the scene you want to divide.

3 Press [FUNC.], select [✂ Divide] and press (SET).

- The scene selected will start playing back. Pause the playback at the point where you want to divide the scene.
- You can use the following icons to bring the scene to a precise point.
  ◀◀/▶▶: Search (fast playback) backward/forward.
  ⏮/⏭: Skip to the beginning/end of the current scene.
  ❚❚: Pause playback.
  ▶: Resume playback.
  ◀❚❚/❚❚▶: Frame backward/forward (during playback pause).
- Press [FUNC.] or ■ to stop the playback and cancel the division of the scene.

4 **Select (◀▶) the ✂ icon and press (SET) to divide the scene.**

5 **Select (▶) [Yes] and press (SET).**

The video from the division point to the end of the scene will appear as a new scene in the index screen.

NOTES

- When advancing/reversing frames while dividing the scenes, the interval will be 0.5 second.
- If the scene cannot be divided at the point where you paused the playback, advance/reverse a frame and then divide the scene.
- During the playback of a scene that was divided, you may notice some anomalies in the picture/sound at the point where the scene was cut.
- The following scenes cannot be divided:
  - Scenes included in the scene pre-selection (marked with a ✓ checkmark). Remove the selection mark in advance.
  - Video snapshot scenes and other scenes that are too short (less than 3 seconds).
  - Scenes that were edited using the supplied software **ImageMixer 3 SE** and were then written back to a memory card connected to a computer.
- Scenes cannot be divided within 1 second from the beginning or the end of the scene.

Editing the Playlist: Adding, Deleting, Moving and Playing Back

Create a playlist to play back only the scenes you prefer and in the order of your choice. You can play back the scenes in the playlist using your favorite song as background music (🕮 70).

Operating modes: AUTO

Adding Scenes to the Playlist

1 **Open the original movies index screen.**

- HFR18/HFR17/HFR16 You can select the original movies in the built-in memory or on the memory card.
- You can press VIDEO SNAP to open the index screen for video snapshot scenes.

2 **Select (▲▼, ◀▶) the scene you want to add to the playlist, or a scene recorded on the date you want to add to the playlist.**

3 **Add the scene(s) to the playlist.**

FUNC. ➤ [Add to Playlist] ➤ Desired option ➤ [Yes]

Options

[All Scenes (this date)] Adds to the playlist all the scenes that were recorded on the same day as the selected scene.

[This Scene] Adds to the playlist only the scene marked with the orange selection frame.

[Selected Scenes] Adds to the playlist all the scenes selected in advance (marked with a ✓ checkmark). Refer to *Pre-selecting Recordings from the Index Screen* (📖 50).

- When the operation is completed [Scene(s) added to the playlist] will be displayed.
- HFR18/HFR17/HFR16 Scenes are added to the playlist on the same memory they are recorded on.
- To open the playlist index screen from the original movies index screen:
  - HFR18/HFR17/HFR16 For scenes in the built-in memory, press INDEX SEL. . For scenes on the memory card, press INDEX SEL. and then select [Playlist].
  - HFR106 Press PLAYLIST.

NOTES

- Deleting or moving scenes in the playlist will not affect the original recordings.
- You may not be able to add to the playlist scenes that were edited using the software on the supplied software **ImageMixer 3 SE** and were then written back to a memory card connected to a computer.
- HFR18/HFR17/HFR16 You can copy scenes from the built-in memory to the memory card (📖 77) to include in the memory card's playlist also scenes that were originally recorded in the built-in memory.

Deleting Scenes from the Playlist

Deleting scenes from the playlist will not affect your original recordings.

1 Open the playlist index screen.

- HFR18/HFR17/HFR16 Before opening the playlist, you can select the original movies in the built-in memory or on the memory card to open the playlist of the respective memory.
- To open the playlist index screen from the original movies index screen:
  - HFR18/HFR17/HFR16 For scenes in the built-in memory, press [INDEX SEL.]. For scenes on the memory card, press [INDEX SEL.] and then select [Playlist].
  - HFR106 Press [PLAYLIST].
- You can press [VIDEO SNAP] to open the playlist index screen for video snapshot scenes (📖 56).

2 Select (▲▼, ◀▶) the scene you want to delete.

This step is not necessary to delete all scenes.

3 Delete the scene.

[FUNC.] ➤ [🗑 Delete] ➤ Desired option ➤ [Yes]* ➤ [OK] ➤ [FUNC.]

* If you selected [All Scenes], you can press (SET) to interrupt the operation while it is in progress. Some scenes will be deleted nevertheless.

Options

[All Scenes] Deletes all the scenes from the playlist.

[This Scene] Deletes from the playlist only the scene marked with the orange selection frame.

Moving Scenes in the Playlist

Move the scenes in the playlist to play them back in the order of your choice.

1 Open the playlist index screen.

- HFR18/HFR17/HFR16 Before opening the playlist, you can select the original movies in the built-in memory or on the memory card to open the playlist of the respective memory.

- To open the playlist index screen from the original movies index screen:
  - HFR18/HFR17/HFR16 For scenes in the built-in memory, press INDEX SEL. . For scenes on the memory card, press INDEX SEL. and then select [Playlist].
  - HFR106 Press PLAYLIST.
- You can press VIDEO SNAP to open the playlist index screen for video snapshot scenes (📖 56).

2 Select (▲▼, ◀▶) the scene you want to move.

3 Press FUNC., select [Move] and press (SET).

4 Move (▲▼, ◀▶) the orange marker to the desired position of the scene and press (SET).

The original position of the scene and the current position of the marker are displayed at the bottom of the screen.

5 Select (▶) [Yes] and press (SET) to move the scene.

Capturing Video Snapshot Scenes from a Movie

Capture a series of video snapshot scenes from a movie you have previously recorded.

Operating modes: AUTO

1 Play back the movie containing the scene you want to capture.

2 Press START/STOP at the point you want to capture.

- The camcorder captures a video snapshot scene (the blue frame serves as a visual progress bar) and then automatically changes to playback pause mode.
- You can change the length of video snapshot scenes with the [Video Snapshot Length] setting.
- When the camcorder finishes capturing, the screen will momentarily turn black as if a camera shutter had released.

NOTES

- A video snapshot scene can be captured only during playback; it cannot be captured during playback pause mode.

- HFR18/HFR17/HFR16 The captured video snapshot scene is saved to the same memory that contains the movie.
- Video snapshot scenes cannot be captured from any of the following types of movies.
  - Movies shorter than 1 second
  - Scenes that were edited using the software on the supplied software **ImageMixer 3 SE** and were then written back to a memory card connected to a computer.
- When the source scene is itself a video snapshot scene, you may not be able to capture a video snapshot scene depending on the length of the source scene and the length currently selected for video snapshot scenes.
- When you start capturing a video snapshot scene less than 1 second from the end of the scene, the video snapshot scene will be captured starting from the beginning of the following scene.
- During the playback of video snapshot scenes captured from a previously recorded movie, you may notice some anomalies in the picture/sound at the point where the playback switches to a new scene.

HFR18/HFR17/HFR16 Copying Scenes to a Memory Card

You can copy original movies or the entire playlist only from the built-in memory to the corresponding location on the memory card. See *Copying Photos to a Memory Card* (🕮 91) for details on copying photos to the memory card.

Operating modes: AUTO

Copying Original Movies

1 Open the index screen of original movies recorded in the built-in memory.

- Select the tab under the icon.
- You can press VIDEO SNAP to open the index screen for video snapshot scenes.

2 Select (▲▼, ◀▶) the scene you want to copy to the memory card, or a scene recorded on the date you want to copy.

This step is not necessary to copy all scenes or previously selected scenes.

3 Copy the scene(s).

FUNC. ▸ [Copy (▸)] ▸ Desired option ▸ [Yes]* ▸ [OK] ▸ FUNC.

* Press SET to interrupt the operation while it is in progress.

Options

[All Scenes] Copies all the scenes to the memory card.

[All Scenes (this date)] Copies to the memory card all the scenes that were recorded on the same day as the selected scene.

[This Scene] Copies to the memory card only the scene marked with the orange selection frame.

[Selected Scenes] Copies to the memory card all the scenes selected in advance (marked with a ✓ checkmark). Refer to *Pre-selecting Recordings from the Index Screen* (📖 50).

Copying the Entire Playlist

1 Open the index screen of the built-in memory's playlist.

- In the original movies index screen, select the tab under the icon, and then open the playlist index screen:
  - HFR18/HFR17/HFR16 For scenes in the built-in memory, press INDEX SEL. . For scenes on the memory card, press INDEX SEL. and then select [Playlist].
  - HFR106 Press PLAYLIST.
- You can press VIDEO SNAP to open the playlist index screen for video snapshot scenes (📖 56).

2 Copy the playlist.

FUNC. ▸ [Copy (▸)] ▸ [Yes]* ▸ [OK] ▸ FUNC.

* Press SET to interrupt the operation while it is in progress.

IMPORTANT

- Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.

- Do not disconnect the power source or turn off the camcorder.
- Do not change the camcorder's operating mode.

NOTES

- If the memory card slot cover is open, or the LOCK switch on the memory card is set to prevent writing, you will not be able to copy movies to the memory card.

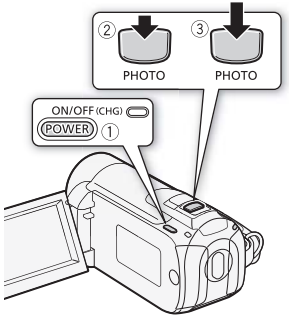
3 Photos

Refer to this chapter for details on shooting photos – taking photos and playing them back, capturing photos from video and printing photos.

Basic Recording

Taking Photos

Operating modes: AUTO



1 Turn on the camcorder.

- HF R18 / HF R17 / HF R16 By default, photos are recorded in the built-in memory. You can set the memory card as the recording media for photos (📖 35).
- Please read the IMPORTANT section (📖 81) before using an Eye-Fi card.

2 Press PHOTO halfway.

Once the focus is automatically adjusted, ⊙ will turn green and one or more AF frames will appear.

3 Press PHOTO fully.

The ACCESS indicator will flash as the photo is being recorded.

When you have finished recording

1 Make sure that the ACCESS indicator is off.

2 Turn off the camcorder.

3 Close the LCD panel.

IMPORTANT

- Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the power source or turn off the camcorder.
  - Do not change the camcorder's operating mode.
- When recording photos on an Eye-Fi card, photos will be uploaded automatically if you are within the range of a configured network. Make sure Eye-Fi cards are approved in the country or region of use.
  See also *Using an Eye-Fi card* (🕮 122).

NOTES

- You cannot take photos when [Frame Rate] is set to [PF25 PF25]. Also, you cannot take photos when digital zoom is activated (light blue and dark blue area on the zoom bar).
- When [Flicker Reduction] is set to [50Hz 50 Hz] or [60Hz 60 Hz], the camcorder will automatically adjust the shutter speed.

Selecting Photo Size and Quality

Photos are recorded as JPG files. As a general rule, select a larger photo size for higher quality. Select the [LW 1920x1080] size for photos with an aspect ratio of 16:9.

Operating modes: AUTO

Options

Photo size options and the approximate number of photos that can be recorded on memory cards of various sizes are given in the following table.

FUNC. ▸ [1600x1200] ▸ Desired photo size* ▸ Desired photo quality* ▸ FUNC.

* Press SET to move back and forth between size and quality selection. The number displayed on the right corner indicates the approximate number of photos that can be recorded with the current quality/size setting.

NOTES

- The actual number of photos that can be recorded will vary depending on the subject and shooting conditions.
- The camcorder retains the last setting used even if you set the camcorder to AUTO mode.
- When printing photos, use the following guidelines as a reference for selecting the print size.
  - **LW** 1920x1080: To print photos with a 16:9 aspect ratio. Wide-sized photo paper is required.
  - **L** 1600x1200: To print photos up to L size (9 x 13 cm) or postcard size (10 x 14.8 cm).
  - **S** 640x480: To send photos as e-mail attachments or to post on the Web.

Approximate number of photos available on a memory card

♦ Default value

Memory card	128 MB			512 MB			1 GB		
Photo quality[1] → / Photo size ↓	S	♦		S	♦		S	♦	
LW 1920x1080	50	75	150	315	470	925	670	1,000	1,970
L 1600x1200♦	55	80	160	340	505	995	720	1,075	2,115
S 640x480	340	490	890	2,070	2,995	5,390	4,395	6,350	11,430[2]

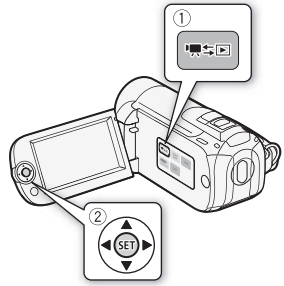
[1] S: [Super Fine], ♦: [Fine], : [Normal].

[2] Approximate number of photos that can actually be recorded on the memory card. (The maximum number of remaining photos displayed on the screen is 9999.)

Viewing Photos

Operating modes: AUTO

1 **Press** .
- The original movies index screen will appear in most cases.
- If a photo appears in single photo view, move the zoom lever toward **W** to open the photo index screen. Proceed to step 3.



2 **Open the photo index screen.**
- HFR18/HFR17/HFR16 You can select the photos in the built-in memory or on the memory card.
- Move the zoom lever toward **W** to show 15 photos per page; move it toward **T** to show 6 photos per page.

3 **Select (▲▼, ◄►) a photo.**
- Move the orange selection frame to the photo you want to view.
- When you have recorded a large number of photos, you can display (▲▼) a slidebar below the photo thumbnails and browse (◄►) through whole index pages.

4 **Press (SET).**
The selected photo is displayed in single photo view.

To return to the index screen from single photo view

1 Open (▲) the joystick guide.

2 Select (▲▼) the icon and press (SET).
You can also move the zoom lever toward **W** to open the photo index screen.

Photo Jump Function

When you have recorded a large number of photos, you can jump 10 or 100 photos at a time.

1 **Open (▲) the joystick guide.**

2 **Select (▲▼) the icon and press (SET).**

3 **Select (▲▼) [Jump 10 photos] or [Jump 100 photos].**

4 **Jump (◄►) the number of photos selected and press (SET).**

IMPORTANT

- Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the power source or turn off the camcorder.
  - Do not change the camcorder's operating mode.
- The following types of images files that have been transferred to a memory card connected to a computer may not be displayed correctly.
  - Images not recorded with this camcorder.
  - Images edited on or uploaded from a computer.
  - Images whose file names have been changed.

Deleting Photos

You can delete those photos that you are not interested in keeping.

Operating modes: AUTO

Deleting a Single Photo

1 **In single photo view, select (◄►) the photo you want to delete.**

2 **Open (▲) the joystick guide.**

3 **Select (▲▼) the icon and press (SET).**

4 **Select (◄►) [Yes] and press (SET).**

Using the FUNC. Menu

1 In single photo view, open the photo selection screen.

FUNC. ▸ [🗑 Delete]

[🗑 Delete] appears on the screen.

2 Select (◀▶) the photo you want to delete and press (SET).

3 Select (◀▶) [Yes] and press (SET) to delete the photo.

4 Repeat steps 2-3 to delete additional photos or press FUNC. twice to close the menu.

Deleting Photos from the Index Screen

1 Open the photo index screen.

HFR18/HFR17/HFR16 You can select the photos in the built-in memory or on the memory card.

2 Select (▲▼, ◀▶) the photo you want to delete.

This step is not necessary to delete all photos or previously selected photos.

3 Delete the photo(s).

FUNC. ▸ [🗑 Delete] ▸ Desired option ▸ [Yes]* ▸ [OK] ▸ FUNC.

* If you selected an option other than [This Photo], you can press (SET) to interrupt the operation while it is in progress. Some photos will be deleted nevertheless.

Options

[All Photos] Deletes all the photos.

[This Photo] Deletes only the photo marked with the orange selection frame.

[Selected Photos] Deletes all the photos selected in advance (marked with a ✓ checkmark). Refer to *Pre-selecting Recordings from the Index Screen* (🕮 50).

IMPORTANT

- Be careful when deleting photos. Deleted photos cannot be recovered.
- Protected photos cannot be deleted.

Magnifying Photos during Playback

In single photo view, photos can be magnified up to 5 times. will appear for photos that cannot be enlarged.

Operating modes: AUTO

1 **Move the zoom lever toward T.**
   - The photo is magnified by 2 times and a frame appears indicating the position of the magnified area.
   - To further enlarge the photo, move the zoom lever toward **T**. To reduce the magnification times, move it toward **W**.

2 **Move (▲▼, ◄►) the frame to the part of the photo you want to see enlarged.**
   To cancel the magnification, move the zoom lever toward **W** until the frame disappears.

Slideshow

You can play a slideshow of all the photos and even set it to music (📖 70).

Operating modes: AUTO

1 **Open the photo index screen.**

2 **Select the background music to use when playing back the photo slideshow (📖 70).**

3 **Back in the index screen, select first photo of the slideshow.**

4 **Start the slideshow set to the selected music track.**

FUNC. ▸ [Slideshow]

- During playback, push the joystick (◀▶) to adjust the volume.
- Press FUNC. to stop the slideshow. Hide (▼) the volume controls if necessary.

To change the slideshow's transition effects

FUNC. ▸ [Menu] ▸ [Slideshow Transition] ▸ Desired option ▸ FUNC.

Options (♦ Default value)

[Off] Photos in the slideshow advance without any transition effect.

[Dissolve] The current photo fades out as the next photo fades in.

[Slide Image]♦ Photos slide to the left when they advance.

NOTES

- The background music may not be played back correctly when playing back a slideshow from a memory card with slow transfer rates.
- When playing back a slideshow with music from an external audio player, the slideshow will repeat until the music finishes.

Rotating Photos

You can rotate photos 90 degrees clockwise to change their orientation.

Operating modes: AUTO

1 **In single photo view, open the photo selection screen.**

FUNC. ▸ [Rotate]

[Rotate] appears on the screen.

2 **Select (◄►) the photo you want to rotate.**

3 **Press (SET) to rotate the photo.**

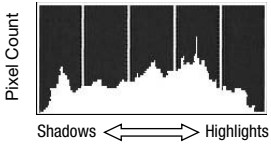
4 **Repeat steps 2-3 to change the orientation of additional photos or press FUNC. twice to close the menu.**

Histogram Display

In single photo view, you can display the histogram and the icons of all the functions used at the time of recording. Use the histogram as a reference to verify the correct exposure of the photo.

Operating modes: AUTO

The area to the right of the histogram represents highlights and the left side represents shadows. A photo whose histogram skews to the right is relatively bright; while one whose histogram peaks to the left, is relatively dark.



Capturing Photos from a Movie

You can capture a single photo from a previously recorded scene. The size of the captured photo will be [**LW** 1920x1080] and it cannot be changed, but you can select the photo quality.

POINTS TO CHECK

- Please read the IMPORTANT section (90) before using an Eye-Fi card.

Operating modes: AUTO

To select the photo capture settings

FUNC. ▸ [Menu] ▸ [Photo Capture Quality] ▸ Desired photo quality* ▸ FUNC.

* The number displayed at the bottom indicates the approximate number of photos that can be recorded with the current quality setting.

To capture the photo

1 Play back the scene from which you want to capture a photo.

2 Pause the playback at the point you want to capture.

3 Press PHOTO fully.

IMPORTANT

- When capturing photos on an Eye-Fi card, photos will be uploaded automatically if you are within the range of a configured network. Always verify that Eye-Fi cards have been approved in the country/region of use. See also *Using an Eye-Fi card* (122).

NOTES

- The data code of the photos will reflect the date and time of recording of the original scene.
- Photos captured from a scene with a lot of fast movement may be blurred.
- HFR18/HFR17/HFR16 Photos will be recorded on the memory selected for recording photos.

Protecting Photos

You can protect photos from accidental erasure.

Operating modes: AUTO

Protecting Single Photos

1 In single photo view, open the photo selection screen.

FUNC. ▸ [Protect]

[Protect] appears on the screen.

2 Select (◄►) the photo you want to protect.

3 Press (SET) to protect the photo.

appears on the bottom bar and the photo cannot be deleted. Press (SET) again to remove the protection.

4 Repeat steps 2-3 to protect additional photos or press FUNC. twice to close the menu.

Protecting Photos from the Index Screen

1 Open the photo index screen.

HFR18/HFR17/HFR16 You can select the photos in the built-in memory or on the memory card.

2 **Select (▲▼, ◀▶) the photo you want to protect.**

FUNC. ➤ [Protect] ➤ Desired option ➤ [Yes] ➤ [OK] ➤ FUNC.

Options

[Individual Photos] Opens the same screen described previously in *Protecting Single Photos*. Continue from step 3 of that procedure to protect the photo.

[Selected Photos] Protects all the photos selected in advance (marked with a ✓ checkmark). Refer to *Pre-selecting Recordings from the Index Screen* (📖 50).

[Remove All] Removes the protection from all photos.

IMPORTANT

- Initializing the memory will permanently erase all recordings, including protected photos.

HFR18/HFR17/HFR16 Copying Photos to a Memory Card

You can copy photos only from the built-in memory to the memory card.

POINTS TO CHECK

- Please read the IMPORTANT section (📖 93) before using an Eye-Fi card.

Operating modes: AUTO

Copying a Single Photo

1 **Select to view the photos recorded in the built-in memory.**
In the index screen, select the tab under the icon and move the zoom lever toward **T** to return to single photo view.

2 Open the photo selection screen.

FUNC. ▸ [Copy (▸)]

[Copy (▸)] appears on the screen.

3 Select (◄►) the photo you want to copy and press (SET).

4 Select (◄►) [Yes] and press (SET) to copy the photo.

5 Repeat steps 3-4 to copy additional photos or press FUNC. twice to close the menu.

Copying Photos from the Index Screen

1 Open the index screen of the photos recorded in the built-in memory.

Move the zoom lever toward **W** and then select the tab under the icon.

2 Select (▲▼, ◄►) the photo you want to copy.

This step is not necessary to copy all photos or previously selected photos.

3 Copy the photo(s).

FUNC. ▸ [Copy (▸)] ▸ Desired option ▸ [Yes]* ▸ [OK] ▸ FUNC.

* If you selected [Selected Photos] or [All Photos], you can press (SET) to interrupt the operation while it is in progress.

Options

[All Photos] Copies all the photos.

[This Photo] Copies only the photo marked with the orange selection frame.

[Selected Photos] Copies all the photos selected in advance (marked with a ✓ checkmark). Refer to *Pre-selecting Recordings from the Index Screen* (📖 50).

IMPORTANT

- Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the power source or turn off the camcorder.
  - Do not change the camcorder's operating mode.
- When copying photos onto an Eye-Fi card, photos will be uploaded automatically if you are within the range of a configured network. Always verify that Eye-Fi cards have been approved in the country/region of use. See also *Using an Eye-Fi card* (📖 122).

NOTES

- If the memory card slot cover is open, or the LOCK switch on the memory card is set to prevent writing, you will not be able to copy photos to the memory card.
- If there is not enough space on the memory card, as many photos as possible will be copied before stopping the operation.

Printing Photos (Direct Print)

The camcorder can be connected to any PictBridge-compatible printer. You can mark in advance the photos you want to print and set the desired number of copies as a print order (🕮 97).

PictBridge

Canon printers: SELPHY printers of the CP, DS and ES series and inkjet printers marked with the PictBridge logo.

Operating modes: AUTO

Connecting the Camcorder to the Printer

1 **Set the camcorder to [📷] mode, single photo view.**
HFR18/HFR17/HFR16 You can select the photos in the built-in memory or on the memory card. Afterwards, move the zoom lever toward **T** to return to single photo view.

2 **Turn on the printer.**

3 **Connect the camcorder to the printer using the supplied USB cable.**
- Connection 4. Refer to *Connection Diagrams* (🕮 103).
- If the device selection screen appears, select [Computer/Printer] and press (SET).
- ⇠ appears and changes to PictBridge.

IMPORTANT

- If ⇠ continues to flash (for more than 1 minute) or if PictBridge does not appear, the camcorder is not correctly connected to the printer. In such case, disconnect the USB cable and turn off the camcorder and the printer. After a short while, turn them on again, set the camcorder to [📷] mode and restore the connection.
- During the following operations, even if you connect a printer to the camcorder it will not be recognized.
  - Deleting all photos

- Removing all print orders

NOTES

- will appear for photos that cannot be printed.
- We recommend powering the camcorder using the compact power adapter.
- Refer also to the printer's instruction manual.
- If you have no intention to use the optional DW-100 DVD Burner, you can set or [USB Connection Type] to [Computer/Printer] so the device selection screen does not appear every time you connect the camcorder to a printer.
- For best performance, we recommend keeping the number of photos under 100.

Selecting the Print Settings and Printing

You can select the number of copies and other settings for printing. Setting options vary depending on your printer model.

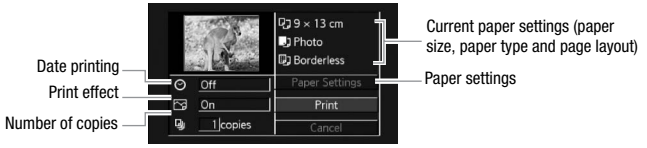
Operating modes: AUTO

1 Select (◄►) the photo you wish to print.

2 Open (▲) the joystick guide.

3 Select (▲▼) the icon and press (SET).

The print settings menu appears.



4 In the print settings menu, select (▲▼, ◄►) the setting you want to change and press (SET).

5 Select (▲▼) the desired setting option and press (SET).

6 Select (▲▼, ◄►) [Print] and press (SET).

- Printing starts. The print settings menu disappears when the print job is completed.
- To continue printing, select (◄►) another photo.

Options

[Paper Size]* Available paper sizes vary depending on the printer model.

[Paper Type]* Select [Photo], [Fast Photo], [Plain] or [Default].

[Page Layout]* Select [Default], [Bordered] or one of the following page layouts.

[Borderless]: The photo is enlarged and may be slightly cropped at the edges to fit the paper.

[x photos/sheet]: Refer to the following sidebar.

[ ] (Date print) Select [On], [Off] or [Default].

[ ] (Print effect) Available only with printers compatible with the Image Optimize function. Select [On], [Off] or [Default].

Canon inkjet/SELPHY DS printers: You can also select [Vivid], [NR] and [Vivid+NR].

[ ] (Number of copies) Select 1-99 copies.

* Select (▲▼, ◀▶) [Paper Settings] and press (SET) to change all three settings consecutively.

[x photos/sheet]: Printing multiple photos on the same sheet

When using Canon printers you can print the same photo multiple times on the same sheet of paper. Use the following table as a guideline for the recommended number of copies depending on the [Paper Size] setting.

[Paper Size]→ / Canon printer ↓	[Credit Card]	[9 x 13 cm]	[10 x 14.8 cm]	[A4]
Inkjet printers SELPHY DS	–	–	2, 4, 9 or 16[1]	4
SELPHY CP/ES	2, 4 or 8[2]	2 or 4	2 or 4	–

[1] You can also use the special sticker sheets.

[2] SELPHY CP series only:
- With the [8 photos/sheet] setting, you can also use the special sticker sheets.
- You can use [2 photos/sheet] or [4 photos/sheet] also when using wide-sized photo paper with [Default] settings.

NOTES

- Print setting options and [Default] settings vary depending on the printer model. For details, refer to the printer's instruction manual.

To cancel a print job

1 Press (SET) ([Stop]) while printing.

2 Select (◄►) [OK] and press (SET).

When you have finished printing

Disconnect the USB cable from the camcorder and printer and turn off the camcorder.

Print errors

If an error occurs while printing, an error message (for example, [No paper]) will appear on the camcorder's screen. Solve the problem referring to the error message list (📖 154) and to the printer's instruction manual.

- **Canon's PictBridge-compatible printers:** If printing does not resume automatically after you solved the problem, select [Continue] and press (SET) to resume printing. If that option is not available, select [Stop] and press (SET) and then restart printing from the beginning.
- **Other printers or if the error still persists with a Canon printer:** If printing does not resume automatically, disconnect the USB cable and turn off the camcorder. After a short while, turn on the camcorder and restore the USB connection.

Print Orders

You can mark in advance photos you want to print from those recorded on the memory card, and set the desired number of copies as a print order. Later, you can easily print out the print orders by inserting the memory card into the SD memory card slot of DPOF-compatible printers or self-serviced digital photo kiosks. You can set print orders for up to 998 photos.

Operating modes: AUTO

POINTS TO CHECK

- Only photos on the memory card can be set for print orders.

Marking Single Photos with Print Orders

1 In single photo view, open the photo selection screen.

FUNC. ▸ [Print Orders]

Print 0 appears on the screen.

2 Select (◄►) the photo you want to mark with a print order.

3 Press (SET) to set the print order.
The number of copies appears in orange.

4 Set (▲▼) the number of copies desired and press (SET).
To cancel the print order, set the number of copies to 0.

5 Repeat steps 2-4 to mark additional photos with print orders or press FUNC. twice to close the menu.

Setting Print Orders from the Index Screen

1 Open the photo index screen.

2 Select (▲▼, ◄►) the photo you want to mark with a print order.
This step is not necessary to set print orders for previously selected photos or to remove all the print orders.

3 Set the print orders.

FUNC. ▸ [Print Orders] ▸ Desired option* ▸ [Yes] ▸ [OK] ▸ FUNC.

* If you selected [Individual Photos], the same screen described previously in *Marking Single Photos with Print Orders* will open. Continue from step 3 of that procedure.

Options

[Individual Photos] Set print orders for individual photos.

[Selected Photos (1 copy each)] Sets a print order of 1 copy of each of the photos selected in advance (marked with a ✓ checkmark). Refer to *Pre-selecting Recordings from the Index Screen* (📖 50).

[Remove All] Removes all the print orders.

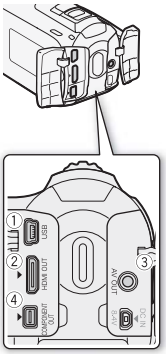
NOTES

- HFR18/HFR17/HFR16 To set print orders set for photos recorded in the built-in memory, copy the photos to the memory card in advance.

4 External Connections

This chapter explains how to connect your camcorder to an external device such as a TV, VCR, or computer.

Terminals on the Camcorder



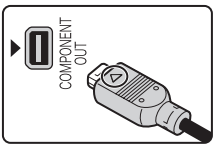
① USB Terminal
Access: Open the left rear terminal cover.

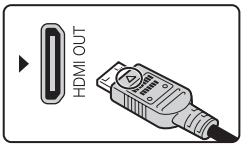
② HDMI OUT Terminal*
Access: Open the left rear terminal cover.
The HDMI OUT terminal offers a high-quality digital connection that combines audio and video in a single convenient cable.

③ AV OUT Terminal
Access: Open the right rear terminal cover.
Sound from the built-in speaker will be muted while the STV-250N Stereo Video Cable is connected to the camcorder. Adjust the volume on the connected TV.

④ COMPONENT OUT Terminal*
Access: Open the left rear terminal cover.
The component video terminal is for video only. When you use connection 2 do not forget the audio connections using the AV OUT terminal.

* When connecting a cable to the camcorder, make sure to align the triangle marks on the cable's connector and on the camcorder's terminal (▶ ◀).

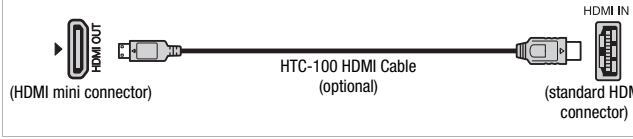




Connection Diagrams

In the following connection diagrams, the left side shows the terminals on the camcorder and the right side shows (for reference only) an example of terminals on a connected device.

Connection 1 **Type: Digital • Quality: High definition • Output only**
Connect to a high-definition TV (HDTV) with an HDMI input terminal.



About the HDMI™ connection

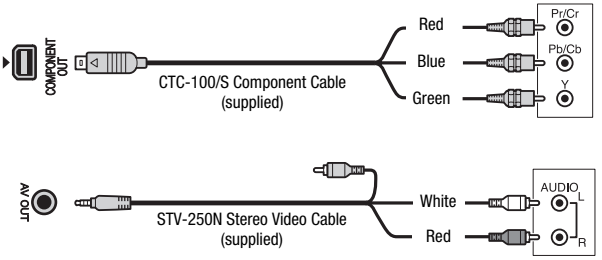
The HDMI (High-Definition Multimedia Interface) connection (1) is a convenient all-digital connection using a single cable for both video and audio. When you connect the camcorder to an HDTV equipped with an HDMI terminal, you can enjoy video and audio playback at the highest quality.

- The HDMI OUT terminal on the camcorder is for output only. Do not connect it to an HDMI output terminal on an external device, as this may damage the camcorder.
- While the camcorder is connected to an HDTV using connection 1, there will be no video output from other terminals.
- Correct operation cannot be guaranteed when connecting the camcorder to DVI monitors.
- Depending on the HDTV, correct playback of personal video content may not be possible using connection 1. Try one of the other connections.

Connection 2

Type: Analog • Quality: High definition • Output only

Connect to a high-definition TV (HDTV) with component video input terminals.



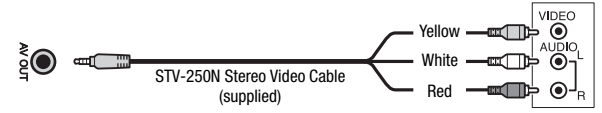
Connection 3

Type: Analog • Quality: Standard definition • Output only

Connect to a standard TV or a VCR with audio/video input terminals.

Change the following on the camcorder:

- [ ] [TV Type] according to the TV set (widescreen or 4:3), if the TV cannot automatically detect and change the aspect ratio

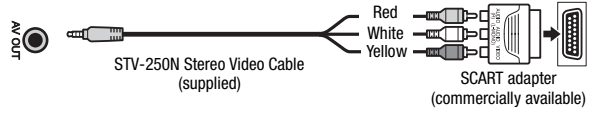


Connection 3

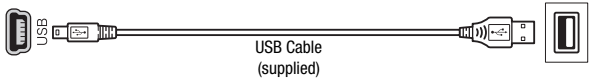
In all respects, exactly the same connection as connection 3.

Connect to a standard TV or VCR with SCART input terminal.

Requires a SCART adapter (commercially available).



Connection 4	**Type: Digital data connection • Output only** Connect to a computer to save your recordings, to the optional DW-100 DVD Burner to create DVD discs from them, or to a printer to print out photos.



Playback on a TV Screen

Connect the camcorder to a TV to enjoy your recordings with family and friends. Playback on an HDTV using one of the high-definition connections will ensure the best playback quality.

Operating modes: AUTO

1 **Turn off the camcorder and the TV.**

2 **Connect the camcorder to the TV.**

Refer to *Connection Diagrams* (101) and select the most appropriate connection for your TV.

3 **Turn on the connected TV.**

On the TV, select as the video input the same terminal to which you connected the camcorder. Refer to the instruction manual of the connected TV.

4 **Turn on the camcorder and set it to or mode.**

Play back the movies or photos.

NOTES

- We recommend powering the camcorder using the compact power adapter.
- Connection 3 or 3: When you play back your 16:9 movies on standard TV sets with a 4:3 aspect ratio, the TV set will switch automatically to widescreen mode if it is compatible with the WSS system. Otherwise, change the aspect ratio of the TV manually.
- To correctly play back movies recorded with x.v.Colour (126) on an HDTV compatible with this standard, additional settings may be required on the connected HDTV. Refer to the TV's instruction manual.

Saving Recordings on a Computer

Movies and photos recorded with this camcorder are saved in the built-in memory (HF R18/HF R17/HF R16 only) or on the memory card. Because space is limited, make sure to save your recordings on a computer on a regular basis.
Carefully read the information in *SDXC memory cards* (📖 32) before performing the procedure using recordings made on an SDXC memory card.

Saving Movies

With the supplied software **ImageMixer 3 SE** you can save scenes to your computer. The software also offers many options for organizing your video library, editing video and more.

Installation

See 'PIXELA Application' Installation Guide.

Using the software

See 'ImageMixer 3 SE Software Guide' (PDF file).

Saving Photos

With the supplied software **Photo Application**, you can save photos to your computer, and easily organize and edit them.

Installation

Install the software before you connect the camcorder to the computer for the first time. See also the relevant sections in the 'Photo Application' Instruction Manual (PHOTO PDF file).

Install the Photo Application module on the supplied Camcorder Supplemental Disc.

PHOTO Refer to *Installing Photo Application*.

- Windows users only: The first time you connect the camcorder to the computer, you also need to select the CameraWindow auto-launch setting.

PHOTO > Refer to *Starting CameraWindow*.

Using the software

1 **Power the camcorder with the compact power adapter.**

2 **Set the camcorder to mode, in single photo view.**

3 **Connect the camcorder to the computer using the supplied USB cable.**
- Connection 4. Refer to *Connection Diagrams* (📖 103).
- If the device selection screen appears, select [Computer/Printer] and press (SET).

4 **Save the photos onto the computer.**

PHOTO > Refer to *Downloading Still Images to the Computer*.

IMPORTANT

- When the camcorder is connected to the computer, do not open the memory card slot cover and do not remove the memory card.
- Operation may not work correctly depending on the software and the specifications/settings of your computer.
- If you wish to use the image files on your computer, make copies of them first. Use the copied files, retaining the originals.
- Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the USB cable.
  - Do not turn off the camcorder or the computer.
  - Do not change the camcorder's operating mode.

NOTES

- Refer also to the computer's instruction manual.
- **Users of Windows 7, Windows Vista, Windows XP and Mac OS X:** Your camcorder is equipped with the standard Picture Transfer Protocol (PTP) allowing you to transfer photos (JPEG only) simply by connecting the camcorder to a computer using the supplied USB cable, without having to install the supplied software **Photo Application**.
- If you have no intention to use the optional DW-100 DVD Burner, you can set or > [USB Connection Type] to [Computer/Printer] so the selection screen does not appear every time you connect the camcorder to a computer.

- If you connect the camcorder to the computer while it is set to [video] mode, the process of creating scene thumbnails will start automatically. In such case, select [Skip] to stop the process and use the computer's Safely Remove Hardware function (Windows) or Eject function (Mac OS) to end the connection to the camcorder. Disconnect the USB cable, set the camcorder to [camera] mode and restore the connection.

Saving Movies onto High-Definition Discs (AVCHD/Blu-ray Discs)

You can save your video recordings in high definition by creating AVCHD or Blu-ray discs in your computer using the supplied software **ImageMixer 3 SE**. Your computer must have a preinstalled DVD drive (Blu-ray Disc drive if creating Blu-ray discs) with writing capabilities. Carefully read the information in *SDXC memory cards* (📖 32) before performing the procedure using recordings made on an SDXC memory card.

Installation

See 'PIXELA Applications' Installation Guide.

Using the software

See 'ImageMixer 3 SE Software Guide' (PDF file).

Even without a computer, you can save your video recordings in high definition by creating AVCHD discs using the optional DW-100 DVD Burner. Refer to this section along with the relevant sections in the instruction manual of the DW-100.

Operating modes: AUTO

Preparations on the Camcorder

When creating AVCHD discs, you can either create a disc with all the scenes or just the scenes in the playlist. When you create an AVCHD disc from the playlist, all of the scenes in the playlist will be added to the disc.

1 Power the camcorder with the compact power adapter.

2 Open the index screen that contains the recordings you want to add to the disc.

- If you are creating an AVCHD disc with all the scenes in the playlist, open the playlist index screen and proceed to *Connecting to the DW-100 DVD Burner and Creating a Disc* (📖 108).

1 Turn on the DVD burner.

DW-100 Refer to *Creating DVDs.*

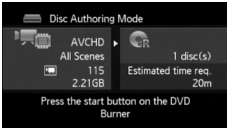
2 Connect the camcorder to the DVD burner using the supplied USB cable.

- Connection 4. Refer to *Connection Diagrams* (103) and **DW-100** *Connections*.
- If the device selection screen appears, select [DVD Burner] and press (SET).
- When the connection is completed, [No disc] will be displayed.

3 Insert a brand new disc into the DVD burner.

- Use the OPEN/CLOSE button on the DVD burner to open and close the disc tray.
- After the disc is recognized, an information screen will display the type of DVD you are creating and the estimated time and number of discs it will require (based on the disc you inserted).
- If you inserted a DVD-RW disc that already contains data, [The disc already contains data.] will be displayed. To overwrite the data (erasing the previous content of the disc), press (SET), select [Yes] and press (SET) again.

4 Press the start button on the DVD burner.



- A progress bar will be displayed on the screen.
- After pressing the start button (while the disc is being written) the operation cannot be canceled.
- When the last disc is finalized, [Task completed] will be displayed. Take out the disc and close the disc tray.

When the data requires multiple discs

After a disc is finalized, it will be ejected automatically and a message will appear. Insert the next disc and close the disc tray.

To create an additional copy of the same disc

After the operation is finished, insert a brand new disc, close the disc tray and repeat the operation.

IMPORTANT

- While the camcorder is connected to the DVD burner, do not open the memory card slot cover and do not remove the memory card.
- Observe the following precautions while the ACCESS indicator on the camcorder is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the USB cable.
  - Do not disconnect the power source or turn off the camcorder or the DVD burner.
  - AVCHD discs created using the optional DW-100 DVD Burner can be played back only with AVCHD-compatible DVD players or Blu-ray Disc players. Do not insert an AVCHD disc into a DVD player that is not compatible with AVCHD specifications as you may not be able to eject the disc.
- For important information on handling your discs, refer to **DW-100** 〉 *Cautions on handling*.

NOTES

- If a scene does not fit entirely in one disc, it may be divided and continue on the next disc.
- When the camcorder contains a large number of scenes to be saved on discs, it may take a long time for the connection to the DVD burner (step 2 above) to be completed. For best performance, we recommend limiting the number of scenes to be saved to 500 or fewer scenes. (With 500 scenes, it will take approximately 3 minutes to complete the connection.)
- In addition to the JPG image files, Photo DVDs contain a slideshow of all the photos saved (each played back for approximately 3 seconds).

HFR18/HFR17/HFR16 Saving Movies onto Standard-Definition Discs (DVD)

You can convert your high-definition video recordings into standard definition and save them onto standard DVDs. These are ideal for sharing your videos with family and friends since, unlike AVCHD or Blu-ray discs, standard DVDs can be played back on most DVD players and computer DVD drives.

You can complete the conversion to standard definition in the camcorder and then use the supplied software **ImageMixer 3 SE** to save the converted scenes and burn them onto DVDs in your computer. Your computer must have a preinstalled DVD drive with writing capabilities.

Installation

See 'PIXELA Applications' Installation Guide.

Using the software

See 'ImageMixer 3 SE Software Guide' (PDF file).

Even without a computer, you can convert your video recordings into standard definition scenes and create DVDs using the optional DW-100 DVD Burner. Refer to this section along with the relevant sections in the instruction manual of the DW-100.
Carefully read the information in *SDXC memory cards* (📖 32) before performing the procedure using recordings made on an SDXC memory card.

Operating modes: AUTO

Converting Scenes into Standard Definition in the Camcorder

Convert high-definition scenes in the built-in memory to standard definition before creating a DVD disc. Converted scenes will be saved to the memory card.

1 **Power the camcorder using the compact power adapter.**

2 **Insert a memory card with sufficient available space in the camcorder.**

3 **Open the index screen in the built-in memory that contains the scenes you want to convert.**
- You can press VIDEO SNAP to open the index screen for video snapshot scenes. You can press INDEX SEL. to open the playlist index screen.

4 **Select (▲▼, ◄►) the scene you want to convert.**
- This step in not necessary for scenes in the playlist. When converting the playlist, you cannot convert individual scenes so the entire playlist will be converted.

5 **Convert the scene(s).**

FUNC. ▸ [Convert HD➡SD (DVD)][1] ▸ Desired option[2,3] ▸ [OK][4] ▸ [OK] ▸ FUNC.

[1] If a message appears regarding music files, follow the instructions on the screen.
[2] This step in not necessary for scenes in the playlist.
[3] The left side of the screen displays the total playback time of the scenes to be converted; the right side shows the file size of the scenes after conversion and the available space on the memory card. Press FUNC. to select the conversion settings (bit rate and recording date/time) as described below.
[4] Press FUNC. and then select [OK] to interrupt the operation while it is in progress.

Options

[This scene] Converts the scene with the orange selection frame.

[Selected Scenes] Converts all the scenes selected in advance (marked with a ✓ checkmark). Refer to *Pre-Selecting Recordings from the Index Screen* (📖 50).

To select the bit rate

Using a higher bit rate will result in better video quality for the converted scenes.

FUNC. ▸ [Bit Rate (Quality)] ▸ Desired option ▸ [Return]

To embed the recording date and time

The recording date and time will always be displayed on the converted scene.

FUNC. ▸ [Embed Date/Time] ▸ [On] ▸ [Return]

NOTES

- **When converting scenes in the playlist or video snapshot index screen:**
  - The scenes are converted with the selected background music (📖 70) instead of the original sound.

- All the selected scenes in the playlist are merged into one converted scene. However, if the converted scene is too large, it will be split into 2 GB-sized scenes.
- When converting only part of a scene, the maximum length of the converted scene will be 10 minutes from the starting (playback pause) point.
- The playlist cannot be converted when its total playback time exceeds 2 hours and 30 minutes.

• The time required to convert scenes is approximately equal to the scenes' total running time. Because conversion generally takes longer on a computer, we recommend using the camcorder to convert scenes.
• You can play back the converted scenes from the [For DVD (SD-VIDEO)] index screen on the memory card. Open the original movies index screen on the memory card, press [INDEX SEL.] and then select [For DVD (SD-VIDEO)].

Connecting to the Computer and Creating DVD Discs

1 Power the camcorder using the compact power adapter.

2 Open the [For DVD (SD-VIDEO)] index screen on the memory card.
- Open the original movies index screen on the memory card, press [INDEX SEL.] then select [For DVD (SD-VIDEO)].
- If the device selection screen appears, select [Computer/Printer] and press (SET).

3 Connect the camcorder to the computer using the supplied USB cable.
- Connection [4]. Refer to *Connection Diagrams* (📖 103).
- On the computer, ImageMixer 3 SE will launch automatically and the startup screen (ImageMixer 3 Launcher) will appear.

4 Click [Disc writing] and continue the operation on the computer following the software's indications.

See also 'ImageMixer 3 SE Software Guide'.

IMPORTANT

• While the camcorder is connected to a computer, do not open the memory card slot cover and do not remove the memory card.

- Observe the following precautions while the ACCESS indicator on the camcorder is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the USB cable.
  - Do not disconnect the power source or turn off the camcorder or the computer.

Connecting to the DW-100 DVD Burner and Creating DVD Discs

When creating DVD discs, all of the converted scenes will be added to the disc.

Operating modes: AUTO

1 Power the camcorder using the compact power adapter.

2 Open the [For DVD (SD-VIDEO)] index screen on the memory card.

- Open the original movies index screen on the memory card, press INDEX SEL. then select [For DVD (SD-VIDEO)].

3 Connect the camcorder to the DW-100 DVD Burner and create the disc.

The procedure is the same as that for burning AVCHD discs (📖 108).

IMPORTANT

- While the camcorder is connected to the DVD burner, do not open the memory card slot cover and do not remove the memory card.
- Observe the following precautions while the ACCESS indicator on the camcorder is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the USB cable.
  - Do not disconnect the power source or turn off the camcorder or the DVD burner.
  - Do not change the camcorder's operating mode.

NOTES

- When the camcorder contains a large number of scenes to be saved on discs, it may take a long time for the connection to the DVD burner to be completed. For best performance, we recommend limiting the number of scenes to be saved to 500 or fewer scenes. (With 500 scenes, it will take approximately 3 minutes to complete the connection.)

Creating Photo DVDs

Using the optional DW-100 DVD Burner, you can create Photo DVDs, which are standard DVDs that contain all your photos as JPG files as well as a slideshow* of all the photos with the selected background music (📖 70). Refer to this section along with the relevant sections in the instruction manual of the DW-100.

* Photos in the slideshow advance at 3-second intervals.

Carefully read the information in *SDXC memory cards* (📖 32) before performing the procedure using recordings made on an SDXC memory card.

Operating modes: AUTO

1 Power the camcorder using the compact power adapter.

2 Open the photo index screen with the photos you want to add to the disc.

- HFR18/HFR17/HFR16 You can select the photos in the built-in memory or on the memory card.

3 Connect the camcorder to the DW-100 DVD Burner and create the disc.

- The procedure is the same as that for burning AVCHD discs (📖 108).

IMPORTANT

- While the camcorder is connected to the DVD burner, do not open the memory card slot cover and do not remove the memory card.
- Observe the following precautions while the ACCESS indicator on the camcorder is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the USB cable.
  - Do not disconnect the power source or turn off the camcorder or the DVD burner.

- Do not change the camcorder's operating mode.

NOTES

- If you are creating a Photo DVD from photos on the memory card and the memory card contains scenes converted into standard definition for Web upload, the thumbnails for those scenes will also be added to the Photo DVD as image files.

Playing Back Discs Using the DW-100 DVD Burner

You can use the optional DW-100 DVD Burner and the camcorder also to play back high-definition (AVCHD) discs. This is very convenient, for example to play back your discs even in a location where an AVCHD-compatible DVD player is not available.

Operating modes: AUTO

1 **Connect the camcorder to the TV.**
Refer to *Connection Diagrams* (📖 101). Select connection 1 or 2 to enjoy high-definition playback.

2 **Turn on the camcorder and set it to mode (📖 43).**

3 **Turn on the DVD burner and set it to Disc Playback mode.**
DW-100 Refer to *Playing DVDs*.

4 **Connect the camcorder to the DVD burner using the supplied USB cable.**
- Connection 4. Refer to *Connection Diagrams* (📖 103) and DW-100 *Connections*.
- If the device selection screen appears, select [DVD Burner] and press (SET).

5 **Insert the disc you want to play back into the DVD burner.**
- Use the OPEN/CLOSE button on the DVD burner to open and close the disc tray.
- After the disc is recognized, the disc's content will be displayed in an index screen.

6 **Select (▲▼, ◄►) the scene you want to play back and press (SET) to begin the playback.**

IMPORTANT

- While the camcorder is connected to the DVD burner, do not open the memory card slot cover and do not remove the memory card.

NOTES

- Only AVCHD discs created with the DW-100 DVD burner can be played back using the DVD burner.
- The camcorder's menus cannot be accessed while the camcorder is connected to the DVD burner.
- With the exception of fast playback at 60x speed, special playback modes (📖 44) can be used also for disc playback.

To play back standard-definition DVDs and Photo DVDs

Standard-definition DVDs and Photo DVDs are created using DVD-Video specifications. Play back these DVDs using standard DVD players. If your computer has a DVD drive, you can play back the slideshow as a DVD and you can also access individual photos as JPG files.

NOTES

- Standard-definition DVDs and Photo DVDs cannot be played back using the DW-100 DVD Burner.

Copying Your Recordings to an External Video Recorder

In High Definition

Connect the camcorder to AVCHD-compatible digital video recorders to make perfect copies of your movies in high definition. If the external digital video recorder has an SD memory card slot, you can use the memory card to copy your movies without connecting the camcorder. Details will vary depending on the device used so be sure to refer to the instruction manual of the digital video recorder used.

In Standard Definition

You can copy your movies by connecting the camcorder to a VCR or a digital video recorder with analog audio/video inputs. Video output will be in standard definition, although the original scenes are in high definition.

Operating modes: AUTO

Connecting

Connect the camcorder to the VCR using Connection 3 or 3. Refer to *Connection Diagrams* (🕮 102).

Recording

1. **External device: Load a blank cassette or disc and set the device to record pause mode.**
2. **Turn on the camcorder and set it to mode.**
3. **Camcorder: Locate the scene you wish to copy and pause the playback just before the desired scene.**
4. **Camcorder: Resume playback.**
   - Push the joystick (▼) to hide the joystick guide.
   - By default, on-screen displays will be embedded in the output video signal. You can change the displays by repeatedly pressing DISP. (🕮 65).
5. **External device: Start recording when the scene you wish to copy appears; stop recording when it ends.**
6. **Camcorder: Stop playback.**

NOTES

- We recommend powering the camcorder using the compact power adapter.

Uploading Movies to Video Sharing Web Sites

You can convert your high-definition video recordings into standard definition in order to upload them to your favorite video sharing Web site.

If you are using an Eye-Fi card, after converting your video recordings into standard definition scenes you can upload your movies wirelessly, directly from the camcorder. Refer to Eye-Fi's homepage for the latest information on compatible Web sites.

HFR18/HFR17/HFR16 You can complete the conversion to standard definition in the camcorder and then use the supplied software **ImageMixer 3 SE** to upload your videos to the Web.

HFR106 Use the supplied software **ImageMixer 3 SE** to upload your videos to the Web.

Installation

See 'PIXELA Applications' Installation Guide.

Using the software

See 'ImageMixer 3 SE Software Guide' (PDF file).

Operating modes: AUTO

HFR18/HFR17/HFR16 Converting Scenes into Standard Definition in the Camcorder

1 **Power the camcorder using the compact power adapter.**

2 **Insert a memory card with sufficient available space in the camcorder.**

3 **Open the index screen in the built-in memory that contains the scenes you want to convert.**
- You can press VIDEO SNAP to open the index screen for video snapshot scenes (📖 56). You can press INDEX SEL. to open the playlist index screen.

4 **Select (▲▼, ◄►) the scene you want to convert.**
- You can select in advance the scenes you want to convert. Refer to *Pre-selecting Recordings from the Index Screen* (📖 50).
- When converting the playlist, you cannot convert individual scenes so the entire playlist will be converted.

5 **Convert the scene(s).**

WEB ▸ [OK]

- If a message appears regarding music files, follow the instructions on the screen.
- The left side of the screen displays the total playback time of the scenes to be converted; the right side shows the file size of the scenes after conversion and the available space on the memory card. Press FUNC. to select the conversion settings (bit rate and recording date/time) as described below.
- Press FUNC. and then select [OK] to interrupt the operation while it is in progress.

6 When the conversion is completed, a confirmation screen will appear.

Connect the camcorder to the computer at this point (📖 101) to continue uploading the converted videos to the Web or select [End Without Connecting] to connect to the computer later.

To select the bit rate

Using a higher bit rate will result in better video quality for the converted scenes but they will take longer to upload.

FUNC. ▸ [Bit Rate (Quality)] ▸ Desired option ▸ [Return]

To embed the recording date and time

The recording date and time will always be displayed on the converted scene.

FUNC. ▸ [Embed Date/Time] ▸ [On] ▸ [Return]

To convert only part of a scene

After step 3 above, play back the scene you want to convert. Pause the playback at the point where you want the conversion to begin and continue with step 4.

NOTES

- **When converting scenes in the playlist or video snapshot index screen:**
  - The scenes are converted with the selected background music (📖 70) instead of the original sound.
  - All the selected scenes in the playlist are merged into one converted scene. However, if the converted scene is too large, it will be split into scenes that are 10 minutes long each.
  - The playlist cannot be converted when its total playback time exceeds 2 hours and 30 minutes.
- The time required to convert scenes is approximately equal to the scene's total running time. Because conversion generally takes longer on a computer, we recommend using the camcorder to convert scenes.
- You can play back the converted scenes from the [For Web (MPEG-2)] index screen on the memory card. Open the original movies index screen on the memory card, press [INDEX SEL.] and then select [For Web (MPEG-2)].

Connecting to the Computer and Uploading your Videos

If you are connecting the camcorder to the computer immediately after the conversion described in the previous section, start this procedure from step 3 below. Otherwise, start this procedure from the beginning.

1 **Power the camcorder using the compact power adapter.**

2 **Open the [For Web (MPEG-2)] index screen on the memory card.**
Open the original movies index screen on the memory card, press [INDEX SEL.] then select [For Web (MPEG-2)].

3 **Connect the camcorder to the computer using the supplied USB cable.**
- Connection [4]. Refer to *Connection Diagrams* (📖 103).
- If the device selection screen appears, select [Computer/Printer] and press (SET).
- On the computer, ImageMixer 3 SE will launch automatically and the startup screen (ImageMixer 3 Launcher) will appear.

4 **Click [Web upload] and continue the operation on the computer following the software's indications.**
- See also 'ImageMixer 3 SE Software Guide'.

IMPORTANT

- While the camcorder is connected to the computer, do not open the memory card slot cover and do not remove the memory card.
- Observe the following precautions while the ACCESS indicator is on or flashing. Failing to do so may result in permanent data loss.
  - Do not open the memory card slot cover.
  - Do not disconnect the USB cable.
  - Do not disconnect the power source or turn off the camcorder or the computer.

Uploading your Videos Wirelessly

If you are using an Eye-Fi card, you can automatically upload the movies from the [For Web (MPEG-2)] index screen to your favorite video sharing Web site. You will need to have installed the software supplied with your Eye-Fi card and completed all the required configuration setup in advance. Refer to the instruction manual of the Eye-Fi card. Please read the IMPORTANT section (📖 122) before using an Eye-Fi card.

1 **Insert your Eye-Fi card in the camcorder and make sure there is sufficient available space on the card.**

2 **Convert the desired movie (📖 118).**

- When the conversion is completed, select [End Without Connecting] and press (SET).
- If you are within the range of a configured network, Web upload will start automatically after the conversion is completed.
- The status of the wireless communication is shown by the Eye-Fi icon as follows:
  - (grayed out) Communication not established
  - (white, flashing) Connecting; (white, continuously on) Wireless upload on standby
  - (animated) Wireless upload in progress
  - [Eye-Fi Communication] is set to [OFF Off]
  - Wireless upload stopped by the camcorder (📖 145)
  - Error reading from the Eye-Fi card (📖 143)

IMPORTANT

Using an Eye-Fi card:

- This product is not guaranteed to support Eye-Fi card functions (including wireless transfer). In case of an issue with an Eye-Fi card, please check with the card manufacturer. Also note that an approval is required to use Eye-Fi cards in many countries or regions. Without approval, use of the card is not permitted. If it is unclear whether the card has been approved for use in the area, please check with the card manufacturer.
- Do not use Eye-Fi cards on airplanes and in other places where wireless communication is forbidden. Remove the Eye-Fi card from the camcorder beforehand.

NOTES

- Depending on the amount of data to be transferred or wireless signal conditions, uploading may take a long time. In addition, if wireless signal conditions worsen, uploading may be interrupted.
- Wireless transfer will decrease the effective usage time of the battery pack. You can power the camcorder using the compact power adapter so the battery pack will not be consumed.
- While files are being uploaded, the camcorder's automatic power off function will be disabled.
- If the LOCK switch on the Eye-Fi card is set to prevent writing, you cannot change the [Eye-Fi Communication] setting. In such case, the icon will appear on the screen. Change the position of the LOCK switch to change the setting.
- The ACCESS indicator may flash periodically while the Eye-Fi card is in use.

* This menu option will appear only when using an Eye-Fi card.

5 Additional Information

This chapter contains troubleshooting advice, screen messages, handling and maintenance tips, and other information.

Appendix: Menu Options Lists

Menu items not available appear grayed out. For details about how to select an item, refer to *Using the Menus* (📖 28). For details about each function, see the reference page. Menu options without a reference page are explained after the tables. Menu options in boldface indicate default values.

FUNC. Menu

FUNC. Menu (Mode)

Menu item	Setting options			
Recording programs	**[P Programmed AE]**	●	●	53
	[Cine Mode]	●	●	55
	[Portrait], [Sports], [Snow], [Beach], [Sunset], [Night Scene], [Low Light], [Spotlight], [Fireworks]	●	●	53
White balance	**[Automatic]**, [Daylight], [Tungsten], [Custom WB]	●	●	61
Image effects	**[Image Effect Off]**, [Vivid], [Neutral], [Low Sharpening], [Soft Skin Detail]	●	●	63
Digital effects	**[Digital Effect Off]**, [Fade Trigger], [Wipe], [Black & White], [Sepia]	●	–	63
	[Digital Effect Off], [Black & White], [Sepia]	–	●	

Menu item	Setting options			
Recording mode	[FXP High Quality 17 Mbps], [XP+ High Quality 12 Mbps], **[SP Standard Play 7 Mbps]**, [LP Long Play 5 Mbps]	●	–	39
Photo size/quality	[LW 1920x1080], **[L 1600x1200]**, [S 640x480]	–	●	81
	[Super Fine], **[Fine]**, [Normal]			

FUNC. Menu (Playback Modes)

(movie playback), (playback of video snapshot scenes): ◐ - available only in the original index screen; ◑ - available only in the playlist index screen; ● - available in both; — - not available in either.
(photo playback): ◐ - available only in single photo view; ◑ - available only in the photo index screen; ● - available in both; — - not available in either.

Menu item	Setting options				
[Select Music]	**[Off]**, list of background music tracks	◑	●	◑	70, 87
[Select]	[Individual Scenes], [Remove All Selections]	◐	◐	–	50
	[Individual Photos], [Remove All Selections]	–	–	◑	
HFR18/HFR17/HFR16 [Copy (➧)]	[All Scenes], [All Scenes (this date)], [This Scene], [Selected Scenes]	◐	◐	–	77
	[No], [Yes]	◑	◑	–	
	[No], [Yes]	–	–	◐	91
	[All Photos], [This Photo], [Selected Photos]	–	–	◑	
[Add to Playlist]	[All Scenes (this date)], [This Scene], [Selected Scenes]	◐	◐	–	73
[Divide]	–	◐	–	–	72
[Move]	–	◑	◑	–	75

Menu item	Setting options				
[Protect]	–	–	–	◐	90
	[Individual Photos], [Selected Photos], [Remove All]	–	–	◑	
[Print Orders][1]	0-99 copies	–	–	◐	97
	[Individual Photos], [Selected Photos (1 copy each)], [Remove All]	–	–	◑	
[Rotate]	–	–	–	◐	88
[Delete]	[All Scenes], [All Scenes (this date)], [This Scene], [Selected Scenes]	◐	◐	–	51
	[All Scenes], [This Scene]	◑	◑	–	75
	[No], [Yes]	–	–	◐	84
	[All Photos], [This Photo], [Selected Photos]	–	–	◑	
[Scene Search]	[Calendar Screen], [Date Selection]	◐	◐	–	47
	[Scenes with Faces]	◐	–	–	
HFR18/HFR17/HFR16 [Convert HD ➡ SD (DVD)][2]	[This Scene], [Selected Scene]	◐	◐	–	109
	[Cancel], [OK]	◑	◑	–	
[Slideshow]	–	–	–	●	87

[1] HFR18/HFR17/HFR16 Available only for photos on the memory card.
[2] Available only for scenes in the built in memory.

Camera Setup 1 (Mode)

Menu item	Setting options	🕮
HFR18/HFR17/HFR16 [Rec Media for Movies]	**[Built-in Mem.]**, [Mem. Card]	35
HFR18/HFR17/HFR16 [Rec Media for Photos]	**[Built-in Mem.]**, [Mem. Card]	
HFR18/HFR17/HFR16 [Relay Recording]	[ON On], **[OFF Off]**	35
[Frame Rate]	**[50i 50i (Standard)]**, [PF25 PF25]	–
[x.v.Colour]	[ON On color], **[OFF Off]**	–
[Video Snapshot Length]	[2sec 2 sec], **[4sec 4 sec]**, [8sec 8 sec]	–

[Frame Rate]: Selects the frame rate to be used when recording.
[PF25 PF25]: 25 frames per second, progressive. Using this frame rate will give your recordings a cinematic look. When combined with the [Cine Mode] recording program (🕮 55), the cinematic look will be enhanced.
- You cannot take photos when [Frame Rate] is set to [PF25 PF25].

[x.v.Colour]: Uses a color space with an extended gamut to achieve deeper colors, closer to real life.
- Use this function to record video only when you intend to play back your recordings on an HDTV compatible with x.v.Colour, connected to the camcorder using an HDMI cable. If recordings made with x.v.Colour are played back on a non-compatible TV, colors may not be reproduced correctly.

[Video Snapshot Length]: Selects the length of video snapshot scenes.

Camera Setup 2 (Mode)

Menu item	Setting options	🕮
[Digital Zoom]	**[OFF Off]**, [80x 80x], [400x 400x]*	–
[Zoom Speed]	**[VAR Variable]**, [Speed 3], [Speed 2], [Speed 1]	40

Menu item	Setting options	📖
[AF Mode]	**[I.AF Instant AF]**, [AF Normal AF]	–
[Image Stabilizer]**	[Dynamic], **[Standard]**, [OFF Off]	–
[Flicker Reduction]	**[OFF Off]**, [50Hz 50 Hz], [60Hz 60 Hz]	–
[Auto Slow Shutter]	**[ON On]**, [OFF Off]	–
[Auto Backlight Correction]	**[ON On]**, [OFF Off]	–

* [800x 800x] for the HFR17.
**For movies only.

[Digital Zoom]: Determines the operation of the digital zoom. The color of the indicator indicates the zoom.

- When activated, the camcorder will switch automatically to digital zoom when you zoom in beyond the optical zoom range.
- With the digital zoom the image is digitally processed, so the image resolution will deteriorate the more you zoom in.

Optical zoom	Digital zoom	
W T		
White	Light blue	Dark blue
Up to 20x	20x - 80x	80x - 400x*

* 800x for the HFR17.

[AF Mode]: Select how fast the autofocus will operate.

- With [I.AF Instant AF] the autofocus adjusts quickly to a new subject. This is convenient for example when changing the focus from a near subject to a far subject in the background, or when recording moving subjects.

[Image Stabilizer]: The image stabilizer compensates for camcorder shake. You can select the degree of compensation.
[Dynamic]: This setting compensates for a higher degree of camcorder shake, such as when shooting while walking, and is more effective as the zoom approaches full wide angle.
[Standard]: This setting compensates for a lower degree for camcorder shake, such as when shooting while remaining stationary, and is suitable for shooting natural-looking scenes.
[OFF Off]: Use this setting when the camcorder is mounted on a tripod.

- If the degree of camcorder shake is too high, the image stabilizer may not be able to fully compensate. The image stabilizer may not be able to successfully eliminate all blur if the camcorder or the subject is moving too much.
- The image stabilizer may not work well on subjects with low contrast, with a recurring, repetitive pattern or without vertical lines.
- When [Image Stabilizer] is set to [Dynamic], if the background's movement does not appear natural, select [Standard] or [Off].

[Flicker Reduction]: If the screen starts to flicker when recording movies under fluorescent lights, change the setting to reduce the effect.
- Flicker reduction can be activated only when the recording program is set to [Programmed AE.]

[Auto Slow Shutter]: The camcorder automatically uses slow shutter speeds to obtain brighter recordings in places with insufficient lighting.
- Minimum shutter speed used: 1/25; 1/12 when the frame rate is set to [PF25].
- The auto slow shutter can only be activated when the recording program is set to [Programmed AE], but the setting will not change even if you set the camcorder to mode.
- If a trailing afterimage appears, set the slow shutter to [Off].
- If (camcorder shake warning) appears, we recommend stabilizing the camcorder, for example, by mounting it on a tripod.

[Auto Backlight Correction]: When shooting subjects with a strong light source behind them, you can have the camcorder automatically correct for the backlight.
- In mode, auto backlight correction will automatically be set to [On].

Camera Setup 3 (Mode)

Menu item	Setting options	
[Self Timer]	[On], **[Off]**	57
[Focus Assistance]	**[On]**, [Off]	–
[Onscreen Markers]	**[Off]**, [Level (White)], [Level (Gray)], [Grid (White)], [Grid (Gray)]	–
[Audio Level Indicator]	[On], **[Off]**	66
[Wind Screen]	**[Automatic]**, [Off]	–

Menu item	Setting options	🕮
[Microphone Attenuator]	[ON On ATT], **[OFF Off]**	–

[Focus Assistance]: When the focus assistance is activated, the image at the center of the screen is magnified to help you focus manually (🕮 59).
- Using the focus assistance will not affect the recordings. It will be cancelled automatically after 4 seconds or when you start recording.

[Onscreen Markers]: You can display a grid or a horizontal line at the center of the screen. Use the markers as a reference to make sure your subject is framed correctly (vertically and/or horizontally).
- Using the onscreen markers will not affect the recordings.

[Wind Screen]: The camcorder automatically reduces the background sound of wind when recording outdoors.
- Some low-frequency sounds will be suppressed along with the sound of wind. When recording in surroundings unaffected by wind or if you want to record low-frequency sounds, we recommend setting the wind screen to [OFF Off].

[Microphone Attenuator]: Helps prevent audio distortions in due to high audio recording levels.
- Set the microphone attenuator to [ON On ATT] when the audio recording level (🕮 66) is set correctly but the audio still sounds distorted. When the microphone attenuator is activated, ATT appears on the screen.

/ Playback Setup

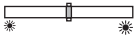
Menu item	Setting options			🕮
HFR18/HFR17/HFR16 [Rec Media for Photos]	**[Built-in Mem.]**, [Mem. Card]	●	–	35
[Photo Capture Quality]	[Super Fine], **[Fine]**, [Normal]	●	–	89
[Video Snapshot Length]	[2sec 2 sec], **[4sec 4 sec]**, [8sec 8 sec]	●	–	126
[Data Code]	[Date], [Time], **[Date and Time]**, [Camera Data]	●	–	–

Menu item	Setting options			
[USB Connection Type]	[DVD Burner], [Computer/Printer], **[Connect and Set]**	●	●	–
[Slideshow Transition]	[Off], [Dissolve], **[Slide Image]**	–	●	87

[Data Code]: Displays the date and/or time when the scene was recorded.
[Camera Data]: Displays the aperture (f-stop) and shutter speed used when recording the scene.

[USB Connection Type]: Select the connection protocol to use when connecting the camcorder to an external device using the supplied USB cable.
[DVD Burner]: To connect exclusively to the optional DW-100 DVD Burner.
[Computer/Printer]: To connect to a computer, printer or similar USB peripheral.
[Connect and Set]: To make the selection from a screen that appears at the time of the connection to the external device.

System Setup 1

Menu item	Setting options				
[Output Onscreen Displays]	**[On]**, [Off]	●	–	–	–
[LCD Brightness]		●	●	●	–
[LCD Screen Dimmer]	[On], **[Off]**	●	●	●	–
[TV Type][1]	[Normal TV], **[Wide TV]**	–	●	●	–
[Speaker Volume]		–	●	●	–
[Demo Mode]	**[On]**, [Off]	●	–	–	–

[1] Option not available when the camcorder is connected to an HDTV using an HDMI cable.

[Output Onscreen Displays]: When set to [On], the camcorder's onscreen displays will appear also on the screen of a TV or monitor connected to the camcorder.

[LCD Brightness]: Adjusts the brightness of the LCD screen.
- Changing the brightness of the LCD screen does not affect the brightness of your recordings or the brightness of the playback image on a TV.

[LCD Screen Dimmer]: When set to [ON On], the LCD screen is dimmed. Doing so is ideal when using the camcorder in locations where the LCD's illumination could become a nuisance to others. Hold DISP. pressed down for about 2 seconds to restore the LCD's normal brightness.
- Dimming the LCD screen does not affect the brightness of your recordings or the brightness of the playback image on a TV.
- When the screen dimmer is set to [OFF Off], the LCD screen will return to the brightness level that was in use before the screen was dimmed.

[TV Type]: When you connect the camcorder to a TV using the supplied STV-250N Stereo Video Cable, select the setting according to the type of TV in order to display the picture in full and in the correct aspect ratio.
[4:3 Normal TV]: TV sets with 4:3 aspect ratio.
[16:9 Wide TV]: TV sets with 16:9 aspect ratio.
- When the TV type is set to [4:3 Normal TV], during the playback of video originally recorded with an aspect ratio of 16:9, the picture will not be displayed fullscreen.

[Speaker Volume]: Adjust (◄►) the volume of the playback. You can also adjust the volume using the joystick guide (📖 43).

[Demo Mode]: The demonstration mode displays the camcorder's main features. It starts automatically when the camcorder is powered with the compact power adapter if you leave it turned on without a memory card for more than 5 minutes.
- To cancel the demo mode once it has started, press any button or turn off the camcorder.

System Setup 2

Menu item	Setting options				
[Notification Sounds]	**[High Volume]**, [Low Volume], [OFF Off]	●	●	●	–
[Power Saving Mode]	**[ON On]**, [OFF Off]	●	●	●	–
[Quick Start]	[OFF Off], **[10min 10 min]**, [20min 20 min], [30min 30 min]	●	–	–	–
[Control for HDMI][1]	[ON On], **[OFF Off]**	●	●	●	–

Menu item	Setting options				
HFR18 / HFR17 / HFR16 [Initialize /]	HFR18 / HFR17 / HFR16 [Built-in Mem.], [Mem. Card]	●	●[2]	●	36
HFR106 [Initialize]	[Quick Initialization], [Complete Initialization]				
[Photo Numbering]	[Reset], **[Continuous]**	●	●	●	–
[Firmware]	–	–	–	●	–
[Reset All]	[No], [Yes]	●	●	●	–
[Eye-Fi Communication]	**[A Automatic]**, [OFF Off]	●	●	●	121

[1] Option not available when the camcorder is connected to an HDTV using an HDMI cable.
[2] Option available only from the original movies index screen.

[Notification Sounds]: A beep will accompany some operations like turning on the camcorder, the self-timer countdown, etc.

[Power Saving Mode]: In order to save power when the camcorder is powered by a battery pack, it will automatically shut off if left without any operation for 5 minutes.
- Approximately 30 seconds before the camcorder shuts off, [Auto Power Off] will appear.
- In standby mode, the camcorder will shut off after the time selected for the [Quick Start] setting.

[Quick Start]: Select whether to activate the Quick Start function (📖 41) when you close the LCD panel in a recording mode and the length of time after which the camcorder will end the standby mode and shut off automatically.

[Control for HDMI]: Activates the HDMI-CEC (Consumer Electronics Control) function. When you connect the camcorder to an HDTV compatible with HDMI-CEC using an HDMI cable, you can control the camcorder's playback using the remote control of the TV.
- If set to [ON On], when the camcorder is connected to a compatible HDTV using an HDMI cable, the video input on the TV will automatically be set to the camcorder's video input. Then, you can use the up/down/left/right buttons and the OK or SET button on the TV's remote control to play back your recordings.

- Depending on the TV set, additional settings may be required on the TV itself to activate the HDMI-CEC function. Refer to the TV's instruction manual.
- Correct operation of the HDMI-CEC function cannot be guaranteed even when connecting the camcorder to compatible TV sets. If you cannot use the remote control of the TV, set [Control for HDMI] to [OFF Off] and operate the camcorder directly.
- The remote control of the TV can only be used to play back movies or photos (or mode only). If the camcorder is connected to the TV while it is set to AUTO or mode, depending on the TV used, turning off the TV will automatically turn off the camcorder even if it is recording at the time.
- We recommend not connecting more than 3 HDMI-CEC compatible devices at a time.

[Photo Numbering]: Select the photo numbering method to be used on a new memory card. Photos are automatically assigned consecutive numbers from 0101 to 9900, and stored in folders containing up to 100 photos. Folders are numbered from 101 to 998.
[Reset]: Photo numbers will restart from 101-0101 every time you insert a new memory card.
[Continuous]: Photo numbers will continue from the number following that of the last photo recorded with the camcorder.
- If the memory card you insert already contains a photo with a larger number, a new photo will be assigned a number one higher than that of the last photo on the memory card.
- We recommend using the [Continuous] setting.
- The photo number indicates the name and location of the file on the memory card. For example, the file name of a photo numbered 101-0107 is "IMG_**0107**.JPG", stored under the folder "DCIM**101**CANON".

[Firmware]: You can verify the current version of the camcorder's firmware. This menu option is usually unavailable.

[Reset All]: Resets all the camcorder's settings to default values.

Language and Date/Time Setup

Menu item	Setting options				
[Language]	[Česky], [Dansk], [Deutsch], [Ελληνικά], **[English]**, [Español], [Français], [Italiano], [Magyar], [Melayu], [Nederlands], [Polski], [Português], [Română], [Suomi], [Svenska], [Türkçe], [Русский], [Українська], [العربية], [فارسی], [ภาษาไทย], [简体中文], [**繁體中文**]	●	●	●	31
[Time Zone/DST]	List of world time zones	●	●	●	31
[Date/Time]	–	●	●	●	30
[Date Format]	[Y.M.D AM/PM (2010.1.1 AM 12:00)], [Y.M.D 24H (2010.1.1 0:00)], [M.D,Y AM/PM (Jan. 1, 2010 12:00 AM)], [M.D,Y 24H (Jan. 1, 2010 0:00)], **[D.M.Y AM/PM (1.Jan.2010 12:00 AM)],** [D.M.Y 24H (1.Jan.2010 0:00)]	●	●	●	–
[Calendar Start Day]	[Saturday], [Sunday], **[Monday]**	–	●	–	–

[Date Format]: Select the date format to be used for most on-screen displays, and (if selected) for the date printed on photos.

[Calendar Start Day]: Select the day on which the week starts for the calendar display (47).

Information Screens

Menu item	Setting options				
HFR18/HFR17/HFR16 [Memory Info]	–	●	●	●	–
[Memory Card Info]	–	●	●	●	–
[HDMI Status]	–	●	●	●	–

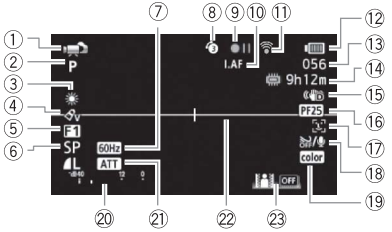
[Memory Info]/[Memory Card Info]: Displays a screen where you can verify how much of the built-in memory or the memory card is currently in use (🎥 total recording time and 📷 total number of photos) and how much space remains available for recording.

- Estimated figures about available movie recording time and available number of photos are approximate and based on the recording mode and photo quality/size settings currently in use.
- HFR18/HFR17/HFR16 The total space for the built-in memory may be less than the capacity listed in *Specifications* (📖 166).
- In the [Memory Card Info] screen you can verify also the Speed Class of the memory card.

[HDMI Status]: Displays a screen where you can verify the standard of the output signal from the HDMI OUT terminal.

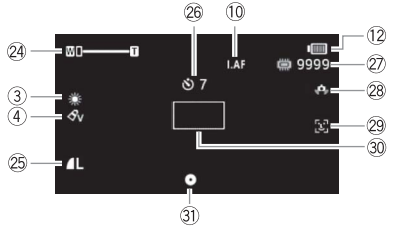
Appendix: Onscreen Icons and Displays

Recording Movies



① Operating mode (📖 24)
② Recording program (📖 53, 55)
③ White balance (📖 61)
④ Image effect (📖 63)
⑤ Digital effect (📖 63)
⑥ Recording mode (📖 39)
⑦ Flicker reduction (📖 127)
⑧ Pre-recording (📖 57)
⑨ Memory operation (📖 139)
⑩ I.AF Instant AF (📖 127), MF Manual focus (📖 59)
⑪ Eye-Fi wireless communication (📖 121)
⑫ Remaining battery time (📖 139)
⑬ While recording/during playback: Scene counter (hours : minutes : seconds) In record pause mode: Total number of scenes
⑭ Remaining recording time
SD On the memory card
HFR18/HFR17/HFR16 In the built-in memory
⑮ Image stabilizer (📖 127)
⑯ 25F progressive frame rate (📖 55, 139)
⑰ Face detection (📖 60)
⑱ Wind screen off (📖 128)
⑲ x.v.Colour (📖 126)
⑳ Audio level indicator (📖 66)
㉑ Microphone attenuator (📖 129)
㉒ Level marker (📖 128)
㉓ Joystick guide (📖 27)

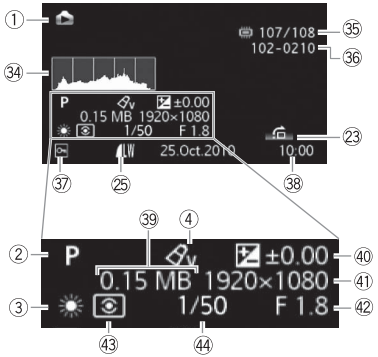
Recording Photos



㉔ Zoom (📖 40), Exposure ☀ (📖 58)
㉕ Photo quality/size (📖 81)
㉖ Self timer (📖 57)
㉗ Number of available photos
SD On the memory card
HFR18 / HFR17 / HFR16 In the built-in memory
㉘ Camcorder shake warning (📖 127)
㉙ Face detection (📖 60)
㉚ AF frame (📖 80)
㉛ Focus and exposure lock (📖 80)

Playing Movies (During Playback)

㉜ Data code (📖 65)
㉝ Scene number



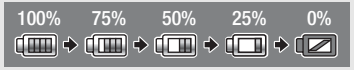
㉞ Histogram (📖 88)
㉟ Current photo / Total number of photos
㊱ Photo number (📖 132)
㊲ Protected photo mark (📖 90)
㊳ Date and time of recording
㊴ File size
㊵ Manual exposure (📖 58)
㊶ Photo size (📖 81)
㊷ Aperture value
㊸ Evaluative light metering*
㊹ Shutter speed

* The light metering mode cannot be changed.

⑨ **Memory operation**

● Record, ●❚❚ Record pause, ▶ Playback, ❚❚ Playback pause, ▶▶ Fast playback, ◀◀ Fast reverse playback, ❚▶ Slow playback, ◀❚ Slow reverse playback

⑫ **Remaining battery time**



- The icon shows a rough estimate of the remaining charge as a percentage of the full charge of the battery pack.
- When is displayed in red, replace the battery pack with a fully charged one.
- When you attach an empty battery pack, the power may turn off without displaying .
- Depending on the conditions under which the camcorder and the battery pack are used, the actual battery charge may not be indicated accurately.

⑭ **Remaining recording time**

When there is no more free space on the memory, [End] (built-in memory, HFR18/HFR17/HFR16 only) or [End] (memory card) will be displayed and the recording will stop.

⑯ **25F progressive frame rate**

Select the 25F progressive frame rate (📖 55) to give your recordings a cinematic look. You can combine this frame rate with the [Cine Mode] recording program to enhance the effect.

㉗ **Number of available photos**

in red: There is no memory card in the camcorder.

in green: 6 or more photos ➔ in yellow: 1 to 5 photos ➔ in red: No more photos can be recorded.

- When viewing the photos, the display will always be in green.
- Depending on the recording conditions, the number of available photos displayed may not decrease even after a recording has been made, or may decrease by 2 photos at once.

Troubleshooting

If you have a problem with your camcorder, refer to this section. Sometimes what you think is a malfunction of the camcorder may have the simplest of solutions - please read the “CHECK THIS FIRST” box before going on to the more detailed problems and solutions. Consult your dealer or a Canon Service Center if the problem persists.

CHECK THIS FIRST

Power supply

- Is the battery charged? Is the compact power adapter correctly connected to the camcorder? (📖 18)

Recording

- Did you turn the camcorder on and correctly set it to recording mode? (📖 24) If you are recording on a memory card, is one correctly inserted into the camcoder? (📖 34)

Playback

- Did you turn the camcorder on and correctly set it to playback mode? (📖 43, 83) If you are playing back recordings from a memory card, is one correctly inserted into the camcorder? (📖 34) Does it contain any recordings?

Power source

The camcorder will not turn on or it turns off by itself.

- The battery pack is exhausted. Replace or charge the battery pack.
- Remove the battery pack and reattach it correctly.

Cannot charge the battery pack.

- Make sure the camcorder is off so charging can start.
- The temperature of the battery pack is outside the charging range. If the battery pack’s temperature is below 0 °C, warm it before charging it; if it is above 40 °C, let the battery pack cool down before charging it.
- Charge the battery pack in temperatures between 0 °C and 40 °C.
- The battery pack is faulty. Replace the battery pack.

A noise can be heard from the compact power adapter.

- A faint sound can be heard while the compact power adapter is connected to a power outlet. This is not a malfunction.

The battery pack is exhausted extremely quickly even at normal temperatures.

- The battery may have reached the end of its battery life. Buy a new battery pack.

Recording

Pressing [START/STOP] will not start recording.

- You cannot record while the camcorder is writing previous recordings onto the memory (while the ACCESS indicator is on or flashing). Wait until the camcorder has finished.
- The memory is full or it already contains the maximum number of scenes (3,999 scenes). Delete some recordings (📖 51, 84) or initialize the memory (📖 36) to free some space.

The point where [START/STOP] was pressed does not match the beginning/end of the recording.

- There is a slight interval between pressing [START/STOP] and the actual start/end of recording. This is not a malfunction.

The camcorder will not focus.

- Autofocus does not work on the subject. Focus manually (📖 59).
- The lens or Instant AF sensor is dirty. Clean the lens or sensor with a soft lens-cleaning cloth (📖 160). Never use tissue paper to clean the lens.

When a subject flits across in front of the lens, the image appears slightly bent.

- This is a phenomenon typical of CMOS image sensors. When a subject crosses very quickly in front of the camcorder, the image may seem slightly warped. This is not a malfunction.

Changing between recording (●)/record pause (● ❚❚)/playback (▶) takes longer than usual.

- When the memory contains a large number of scenes, some operations may take longer than usual. Save your recordings (📖 105) and initialize the memory (📖 36).

Movies or photos cannot be recorded properly.

- This may occur as movies and photos are recorded/deleted over time. Save your recordings (📖 105) and initialize the memory (📖 36).

After using the camcorder for a long time, it becomes hot.

- The camcorder may become hot after using it continuously for long periods of time; this is not a malfunction. If the camcorder becomes unusually hot or it becomes hot after using it only for a short while, it may indicate a problem with the camcorder. Consult a Canon Service Center.

Playback

Cannot add scenes to the playlist.

- The playlist can contain a maximum of 999 scenes. If the playlist includes scenes recorded in FXP mode, the maximum number of scenes in the playlist may be less than 999.
- You may not be able to add scenes to the playlist if they were recorded or edited using another device and then transferred to a memory card connected to a computer.
- The memory is full. Delete some recordings (📖 51, 84) or initialize the memory (📖 36) to free some space.

Cannot move scenes in the playlist.

- The memory is full. Delete some recordings (📖 51, 84) or initialize the memory (📖 36) to free some space.

Cannot delete a scene.

- You may not be able to delete scenes recorded or edited using another device and then transferred to a memory card connected to a computer.

Deleting scenes takes longer than usual.

- When the memory contains a large number of scenes, some operations may take longer than usual. Save your recordings (📖 105) and initialize the memory (📖 36).

Cannot delete a photo.

- The photo is protected. Remove the protection (📖 90).

Cannot capture a video snapshot scene from a movie.

- You cannot capture video snapshot scenes from scenes recorded or edited using another device and then transferred to a memory card connected to a computer.
- The memory is full. Delete some recordings (📖 51, 84) or initialize the memory (📖 36) to free some space.

When playing back scenes/slideshow with background music, the music track is not played back correctly.

- This can occur when you transfer the music files to a memory card connected to a computer after repeatedly recording and deleting scenes (fragmented memory). Save your recordings (📖 105) and initialize the memory (📖 36). Then, transfer the music files first and only then write the video files back to the memory card when it is connected to the computer.
- The transfer rate of the memory card used is too slow. Use a recommended memory card (📖 32).

Playback is not linked with music from a connected external audio player.

- If the player's volume is low, playback may not link to the music. Increase the player's volume.

Cannot divide scenes

- You cannot divide scenes recorded or edited using another device and then transferred to a memory card connected to a computer.
- The memory is full. Delete some recordings (📖 51, 84) or initialize the memory (📖 36) to free some space.

Cannot mark individual scenes/photos in the index screen with a checkmark ✓.

- You cannot select more than 100 scenes/photos individually. Reduce the number of selected scenes/photos.

lights up in red.

- Battery pack is exhausted. Replace or charge the battery pack.

lights up in red.

- A memory card error occurred. Turn off the camcorder. Remove and reinsert the memory card. Initialize the memory card if the display does not change back to normal.
- The memory card is full. Replace the memory card or delete some recordings (📖 51, 84) to free some space on the memory card.

Even after stopping recording, the ACCESS indicator does not go off.

- The scene is being recorded in the memory. This is not a malfunction.

The red ON/OFF (CHG) indicator flashes rapidly (one flash at 0.5-second intervals).

- Charging has stopped because the compact power adapter or the battery pack is faulty. Consult a Canon Service Center.

The red ON/OFF (CHG) indicator flashes (two flashes at 1-second intervals)

- The remaining charge of the battery pack is at least 50% of a full charge. This is not a malfunction.

The red ON/OFF (CHG) indicator flashes very slowly (one flash at 2-second intervals).

- The temperature of the battery pack is outside the charging range. If the battery pack's temperature is below 0 °C, warm it before charging it; if it is above 40 °C, let the battery pack cool down before charging it.
- Charge the battery pack in temperatures between 0 °C and 40 °C.
- The battery pack is damaged. Use a different battery pack.

appears on the screen.

- The LOCK switch on the Eye-Fi card is set to prevent accidental erasure. Change the position of the LOCK switch.
- Data could not be read from the Eye-Fi card. Turn off the camcorder and turn it on again. If the problem persists, it may indicate a problem with the Eye-Fi card. Contact the card manufacturer's customer care.

Picture and Sound

The screen appears too dark.

- The LCD screen was dimmed. Hold DISP. pressed for 2 seconds to restore the LCD screen to its previous brightness setting.

Screen displays turn on and off repeatedly.

- The battery pack is exhausted. Replace or charge the battery pack.
- Remove the battery pack and reattach it correctly.

Abnormal characters appear on the screen and the camcorder does not operate properly.

- Disconnect the power source and reconnect it after a short time. If the problem still persists, use the [Reset All] menu option to reset all the camcorder's settings to default values.

Video noise appears on screen.

- Keep a distance between the camcorder and devices that emit strong electromagnetic fields (plasma TVs, cellular phones, etc.).

Horizontal bands appear on the screen.

- This is a phenomenon typical of CMOS image sensors when recording under some types of fluorescent, mercury or sodium lamps. This is not a malfunction. To reduce the symptoms, change the [Flicker Reduction] setting.

Noise can be heard along with the recorded sound.

- When recording sound with an external microphone, the interference caused by wireless communications may be picked up and recorded as noise. We recommend turning off the wireless communication while recording (132).

Sound is distorted or is recorded at lower levels.

- When recording near loud sounds (such as fireworks, shows or concerts), sound may become distorted or it may not be recorded at the actual levels. Activate the microphone attenuator (129) or adjust the audio recording level manually (66).

The picture is displayed correctly but there is no sound from the built-in speaker.

- Speaker volume is turned off. Adjust the volume.
- If the STV-250N Stereo Video Cable is connected to the camcorder, disconnect it.

Memory Card and Accessories

Cannot insert the memory card.

- The memory card was not facing the correct direction. Turn the memory card over and insert it.

Cannot record on the memory card.

- The memory card is full. Delete some recordings (51, 84) to free some space or replace the memory card.
- Initialize the memory card (36) when you use it with the camcorder for the first time.
- The LOCK switch on the memory card is set to prevent accidental erasure. Change the position of the LOCK switch.
- A compatible memory card must be used to be able to record movies on a memory card (32).

- The folder and file numbers have reached their maximum value. Set [Photo Numbering] to [Reset] and insert a new memory card.

Cannot upload files using an Eye-Fi card.

- Files cannot be uploaded when [Eye-Fi Communication] is set to [Off] (when appears on the screen). Change this setting to [Automatic].
- Opening the LCD panel may improve wireless signal conditions.
- During wireless transfer, transfer may stop in situations such as when the camcorder becomes hot or wireless signal conditions worsen (appears on the screen). Turn off the camcorder and let it cool down. Alternatively, perform wireless transfer in a place with good signal conditions.
- Contact the card manufacturer's customer care.

Connections with External Devices

Video noise appears on the TV screen.

- When using the camcorder in a room where a TV is located, keep a distance between the compact power adapter and the power or antenna cables of the TV.

Playback looks fine on the camcorder but there is no image on the TV screen.

- The video input on the TV is not set to the video terminal to which you connected the camcorder. Select the correct video input.

There is no sound from the TV.

- When connecting the camcorder to an HDTV using the CTC-100/S Component Cable, make sure to connect also the audio connections using the white and red plugs of the STV-250N Stereo Video Cable.

The camcorder is connected using the optional HTC-100 HDMI Cable, but there is no picture or sound from the HDTV.

- Disconnect the HTC-100 HDMI Cable and then restore the connection or turn the camcorder off and then on again.

The camcorder is connected using the optional HTC-100 HDMI Cable, but HDMI-CEC does not work (cannot play back using the TV's remote control).

- Disconnect the HTC-100 HDMI cable and turn off the camcorder and the TV. After a short while turn them on again and restore the connection.
- [Control for HDMI] is set to [Off]. Set it to [On].
- HDMI-CEC is not activated on the connected TV. Activate this function on the TV.
- Even with TV sets compatible with HDMI-CEC the range of functions available differs depending on the type of TV. Refer to the instruction manual of the connected TV.

The computer does not recognize the camcorder even though the camcorder is connected correctly.

- [USB Connection Type] is set to [DVD Burner]. Set it to [Computer/Printer] or to [Connect and Set].

- Disconnect the USB cable and turn off the camcorder. After a short while, turn it on again and restore the connection.
- Connect the camcorder to a different USB port on the computer.
- The camcorder will not be recognized while all photos are being deleted or all print orders are being removed.

The printer is not working even though the camcorder and printer are connected correctly.

- [USB Connection Type] is set to [DVD Burner]. Set it to [Computer/Printer] or to [Connect and Set].
- Disconnect the USB cable and turn off the printer. After a short while turn it on again and restore the connection.
- Cannot connect to a PictBridge-compatible printer if the memory contains 2,500 photos or more.

The camcorder does not recognize the DW-100 DVD Burner even though it is connected correctly.

- [USB Connection Type] is set to [Computer/Printer]. Set it to [DVD Burner] or to [Connect and Set].
- Using the optional DW-100 DVD Burner, discs cannot be created from recordings on an SDXC memory card. To create discs using the DW-100, make sure in advance that your recordings are in the built-in memory or on an SD or SDHC memory card.
- If you connect the optional DVD Burner while the index screen is showing the recordings on the SDXC memory card, the DVD Burner may not operate correctly. In that case, disconnect the USB cable and turn off the DVD Burner.

After connecting the camcorder to a printer, the message [Busy] continues to appear on the screen.

- Disconnect the USB cable and restore the connection after a short while.

Photos are not correctly printed.

- You may not be able to print correctly, using a PictBridge-compatible printer, photos whose file names have been changed or that were recorded, created, edited or changed using another device and then transferred to a memory card connected to a computer.

Cannot save photos on my computer's hard disk.

- When the memory contains 2,500 photos (Windows)/1,000 photos (Mac OS) or more, you may not be able to transfer photos to a computer. HFR18/HFR17/HFR16 Try using a card reader to transfer the photos on the memory card. To transfer the photos in the built-in memory, copy them to the memory card in advance (📖 91).

List of Messages (in alphabetical order)

Following the list of messages for the camcorder you can find separate lists for print-related messages (📖 154) and for messages that appear only when using the optional DW-100 DVD Burner (📖 152).

Accessing the memory card. Do not remove the memory card.

- You opened the memory card slot cover while the camcorder was accessing the memory card or the camcorder started accessing the memory card as you opened the memory card slot cover. Do not remove the memory card until this message disappears.

Back up recordings regularly

- This message may appear when you turn on the camcorder. In the event of a malfunction, recordings may be lost so back up your recordings regularly.

Buffer overflow. Recording was stopped.

- The data transfer rate was too high for the memory card in use and the recording was stopped. Replace the memory card with one rated Speed Class 2, 4, 6 or 10.

HFR18 / HFR17 / HFR16 Built-in memory error

- The built-in memory could not be read. Contact a Canon Service Center.

HFR18 / HFR17 / HFR16 Built-in memory is full

- The built-in memory is full ([End] appears on the screen). Delete some recordings (📖 51, 84) to free some space. Save your recordings (📖 105) and initialize the built-in memory (📖 36).

HFR18 / HFR17 / HFR16 Cannot access the built-in memory

- There is a problem with the built-in memory. Contact a Canon Service Center.

Cannot convert

- Cannot access the memory card. Check the memory card and make sure it is inserted correctly.
- You inserted a MultiMedia Card (MMC) into the camcorder. Use a recommended memory card (📖 32).
- There was an error creating the file name. Set [Photo Numbering] to [Reset] and initialize the memory card (📖 36) or delete all the photos (📖 84) and all the scenes in the [For Web (MPEG-2)] and [For DVD (SD-VIDEO)] index screens (📖 45).

HFR18 / HFR17 / HFR16 Cannot copy

- The total size of the scenes you selected to copy exceeds the available space on the memory card. Delete some recordings on the memory card (📖 51, 84) or reduce the number of scenes to copy.
- The memory card already contains the maximum number of scenes (3,999 scenes). Delete some scenes (📖 51) to free some space.

Cannot divide the scene. Initialize only using the camcorder.

- The scene could not be divided because the camcorder's internal scene management data log is full. Save your recordings (📖 105) and initialize the memory (📖 36). Then, write the video files back to the memory card when it is connected to a computer, and divide the scene again.

Cannot edit

- Could not move a scene in the playlist. Delete some scenes from the playlist (📖 75).

Cannot enter standby mode now

- The camcorder cannot enter standby mode if the remaining battery charge is too low. Charge or replace the battery pack (📖 18).

Cannot play back

- There is a problem with the memory. If this message appears often without apparent reason, contact a Canon Service Center.

HFR18 / HFR17 / HFR16 Cannot play back Cannot access the built-in memory

- There is a problem with the built-in memory. Save your recordings (📖 105) and initialize the built-in memory using the [Complete Initialization] option (📖 36). If the problem persists, contact a Canon Service Center.

Cannot play back Check the memory card

- There is a problem with the memory card. Save your recordings (📖 105) and initialize the memory card using the [Complete Initialization] option (📖 36). If the problem persists, use a different memory card.

HFR18 / HFR17 / HFR16 Cannot play the movies in the built-in memory Initialize only using the camcorder

- The camcorder's built-in memory was initialized using a computer. Initialize the built-in memory with this camcorder (📖 36).

Cannot play the movies on this memory card

- Movies cannot be played back from a 64 MB or smaller memory card. Use a recommended memory card (📖 32).

Cannot play the movies on this memory card Initialize only using the camcorder

- The memory card in the camcorder was initialized using a computer. Initialize the memory card with this camcorder (📖 36).

Cannot record

- You cannot capture video snapshot scenes from scenes recorded or edited using another device and then transferred to a memory card connected to a computer.
- There is a problem with the memory. If this message appears often without apparent reason, contact a Canon Service Center.

HFR18 / HFR17 / HFR16 Cannot record Cannot access the built-in memory

- There is a problem with the built-in memory. Save your recordings (📖 105) and initialize the built-in memory using the [Complete Initialization] option (📖 36). If the problem persists, contact a Canon Service Center.

Cannot record Check the memory card

- There is a problem with the memory card. Save your recordings (📖 105) and initialize the memory card using the [Complete Initialization] option (📖 36). If the problem persists, use a different memory card.

HFR18 / HFR17 / HFR16 Cannot record movies in the built-in memory Initialize only using the camcorder

- The camcorder's built-in memory was initialized using a computer. Initialize the built-in memory with this camcorder (📖 36).

Cannot record movies on this memory card

- Movies cannot be recorded on a 64 MB or smaller memory card. Use a recommended memory card (📖 32).

Cannot record movies on this memory card Initialize only using the camcorder

- The memory card in the camcorder was initialized using a computer. Initialize the memory card with this camcorder (📖 36).

Change the battery pack

- Battery pack is exhausted. Replace or charge the battery pack.

Check the memory card

- Cannot access the memory card. Check the memory card and make sure it is inserted correctly.
- A memory card error occurred. The camcorder cannot record or display the image. Try removing and reinserting the memory card, or use a different memory card.
- You inserted a MultiMedia Card (MMC) into the camcorder. Use a recommended memory card (📖 32).
- If after the message disappears, SP appears in red, perform the following: Turn off the camcorder and remove and reinsert the memory card. If SP turns back to green you can resume recording/playback. If the problem persists, save your recordings (📖 105) and initialize the memory card (📖 36).

Could not add the scene(s) to the playlist

- One or more scenes could not be added to the playlist. The playlist can contain a maximum of 999 scenes. If the playlist includes scenes recorded in FXP mode, the maximum number of scenes in the playlist may be less than 999. Delete some scenes from the playlist (📖 75).

Do not disconnect the USB cable or the power source until you safely end the connection from the computer. Connect the compact power adapter

- When the camcorder is in mode and is connected to the computer with the supplied USB cable, the camcorder cannot be operated. Disconnecting the USB cable or power source while this message appears may result in permanent loss of the recordings in the camcorder. Use the computer's Safely Remove Hardware function to end the connection and disconnect the USB cable before using the camcorder.

Error writing on the memory card. Data may be recovered if the memory card has not been removed. Attempt recovering the data?

- This message will appear the next time you turn on the camcorder if power supply was accidentally interrupted while the camcorder was writing on the memory card. Select [Yes] to try to recover the recordings. If you removed the memory card and used it with another device after this happened, we recommend you select [No].

File name error

- The folder and file numbers have reached their maximum value. Set [Photo Numbering] to [Reset] and delete all the photos on the memory card (📖 84) or initialize it (📖 36).

Initialize only using the camcorder

- There is a problem with the file system that prevents accessing the selected memory. Initialize the memory with this camcorder (📖 36).

LCD Screen has been dimmed

- Hold DISP. pressed for 2 seconds to restore the LCD screen to its previous brightness setting.

May not be possible to record movies on this memory card

- You inserted a memory card without a Speed Class rating. Replace the memory card with one rated Speed Class 2, 4, 6 or 10.
- You may not be able to record movies in FXP mode on a memory card without a Speed Class rating.

Mem. Card Number of scenes already at maximum

- The memory card already contains the maximum number of scenes (3,999 scenes); no further scenes can be recorded or copied (HFR18/HFR17/HFR16 only) onto the memory card. Delete some scenes (📖 51) to free some space.

Mem. Card Unable to recognize the data

- The memory card contains scenes recorded in a different television system (NTSC). It cannot played back with this camcorder.

Memory card cover is open

- After inserting a memory card, close the memory card slot cover (📖 34).

Memory card is full

- The memory card is full. Delete some recordings (📖 51, 84) to free some space or replace the memory card.

Memory card is write-protected

- The LOCK switch on the memory card is set to prevent accidental erasure. Change the position of the LOCK switch (📖 158).

Need to recover files from the memory card. Change the position of the LOCK switch on the memory card.

- This message will appear the next time you turn on the camcorder if power supply was accidentally interrupted while the camcorder was writing on the memory card and later the position of the card's LOCK switch was changed to prevent erasure. Change the position of the LOCK switch.

No memory card

- Insert a compatible memory card into the camcorder (📖 32).

No photos

- There are no photos to play back. Have fun taking some photos (📖 80).

No scenes

- There are no scenes in the index screen selected. Have fun shooting some movies (📖 38).

- After selecting [Scene Search] > [Scenes with Faces], no scenes contain people's faces or no scenes were recorded using the face detection function.
- HF R18 / HF R17 / HF R16 This message will appear when there are no high-definition scenes on the memory card. If you converted scenes into standard definition, you can still open the other index screens to check those scenes (📖 45).

Not enough available space

- Delete some recordings on the memory card (📖 51, 84) or select the [3 Mbps] bit rate for the conversion to SD.

Number of scenes already at maximum

- The maximum number of scenes (3,999 scenes) has been reached. Delete some scenes (📖 51) to free some space.

Playlist is full. Cannot divide the scene.

- Scenes cannot be divided when the playlist already contains 999 scenes. Delete some scenes from the playlist (📖 75).

Print order error

- You attempted to set more than 998 photos in the print order. Reduce the number of print orders.

Scene recorded using another device. Cannot divide the scene.

- Scenes recorded using another device and then transferred to a memory card connected to a computer cannot be divided with this camcorder.

HF R18 / HF R17 / HF R16 Select the built-in memory as the recording media for movies

- You attempted to set relay recording while the memory card is selected as the recording media for movies. Change > [Rec Media for Movies] to [Built-in Mem.].

Some photos could not be deleted

- Protected photos ( ) cannot be deleted. Remove the protection (📖 90).

Some scenes could not be added to the playlist

- Scenes recorded using another device and then transferred to a memory card connected to a computer cannot be added to the playlist.
- The playlist can contain a maximum of 999 scenes. If the playlist includes scenes recorded in FXP mode, the maximum number of scenes in the playlist may be less than 999. Delete some scenes from the playlist (📖 75).

Some scenes could not be deleted

- Movies that were protected/edited with other devices and then transferred to a memory card connected to a computer cannot be deleted with this camcorder.

Task in progress. Do not disconnect the power source.

- The camcorder is updating the memory. Wait until the operation ends and do not disconnect the compact power adapter or remove the battery pack.

This photo could not be deleted

- Protected photos ( ) cannot be deleted. Remove the protection (📖 90).

HFR18/HFR17/HFR16 This memory card contains scenes. Delete all scenes to use relay recording.

- Save the movies on the memory card (📖 116) and initialize the memory card (📖 36).

This photo cannot be displayed

- You may not be able to display photos taken with other devices or image files created or edited on a computer and then transferred to a memory card connected to the computer.
- The playlist can contain a maximum of 999 scenes.

This scene was recorded using another device and cannot be added to the playlist.

- Scenes recorded using another device and then transferred to a memory card connected to a computer cannot be added to the playlist.

To use this function, switch out of AUTO mode

- You pressed a button that cannot be used in AUTO mode. Press AUTO to set the camcorder to flexible recording mode.

Too many photos. Disconnect the USB cable.

- Disconnect the USB cable. Try using a memory card reader or decrease the number of photos on the memory card to fewer than 2,500 photos (for Windows and printers) or 1,000 photos (for Mac OS). Disconnect the USB cable, and restore the connection after a short while.
- If a dialog box appeared on the computer screen, close it. Disconnect the USB cable, and restore the connection after a short while.

HFR18/HFR17/HFR16 Total play time is too long

- The playlist cannot be converted when its total playback time exceeds 2 hours and 30 minutes. Reduce the number of scenes in the playlist.

Unable to recognize the data

- You transferred data to the camcorder recorded in a different television system (NTSC).

Unable to recover data

- Could not recover a corrupted file. Save your recordings (📖 105) and initialize the memory using the [Complete Initialization] option (📖 36).

Messages Related to the Optional DW-100 DVD Burner

If an error message appears while the camcorder is connected to the optional DW-100 DVD Burner, refer to the following section and also to the instruction manual of the DVD burner.

Cannot read the disc. Check the disc.

- During disc recording mode, this message can appear when a commercially available DVD disc (a DVD disc containing movies, software, etc.) or an 8 cm mini DVD disc is inserted. Replace with a brand new disc.
- During disc playback mode, this message can appear when a commercially available DVD disc or a brand new DVD disc is inserted. Replace with an AVCHD disc created with the DVD burner.

Close the memory card slot cover

- The memory card slot cover is open. Close the cover after correctly inserting the memory card.

Connect the compact power adapter

- The camcorder is being powered by the battery pack. Connect the compact power adapter to the camcorder.

Disc access failure. Check the disc.

- There was an error when reading the disc or attempting to write onto it.
- This message can appear also if condensation has formed (📖 160). Wait until the DVD burner dries completely before resuming use.
- The disc may be dirty or not correctly loaded. Try removing the disc and reinserting it after cleaning the recording surface with a clean, soft cloth. If the problem persists, replace with a different disc.

Error reading the data

- Check that the USB cable was not accidentally disconnected.

No disc

- Insert a disc into the DVD burner.
- This message can appear also if condensation has formed (📖 160). Wait until the DVD burner dries completely before resuming use.

No photos

- There are no photos to add to the disc.

No scenes

- There are no scenes to add to the disc.

Operation canceled

- The USB cable was disconnected and the operation was canceled. Check the USB connection.

Unable to recover data

- Could not recover a corrupted file. Save your recordings (📖 105) and initialize the memory using the [Complete Initialization] option (📖 36).

Data transfer error

- Cancel printing, disconnect the USB cable and turn off the printer. After a while, turn the printer back on and reconnect the USB cable.
- You attempted to print from a memory card that contains a large number of photos. Reduce the number of photos.

File error

- You attempted to print a photo that was recorded with another camcorder, has a different compression, or was edited on a computer.

Hardware error

- Cancel printing. Turn off the printer and turn it back on.
- Check the printer status.
- Ink tank errors have occurred. Replace the ink tank.

Incompatible paper size

- The paper settings of the camcorder conflict with the printer's settings.

Ink absorber full

- Select [Continue] to resume printing. Consult a Canon Service Center (refer to the list included with the printer) to replace the ink absorber.

Ink error

- The ink level cannot be detected correctly or the ink cartridge is out of ink. Replace the ink cartridge.

Low ink level

- The ink cartridge needs to be replaced soon. Select [Continue] to restart printing.

No ink

- The ink cartridge is not inserted or is out of ink. Replace the ink cartridge.

No paper

- Paper is not correctly inserted or there is no paper.

Paper error

- There is a problem with the paper. The paper is not correctly loaded or the paper size is wrong.
- If the paper output tray is closed, open it to print.

Paper jam

- The paper jammed during printing. Select [Stop] to cancel printing. After removing the paper, set some paper again and retry printing.

Paper lever error

- Paper lever error occurred. Adjust the paper selection lever to the proper position.

Print head not installed

- No print head is installed in the printer or the print head is defective.

Printer cover open

- Close the printer cover securely.

Printer error

- A malfunction has occurred that may require repairs. (Canon inkjet printers: the printer's green power lamp and orange error lamp flash alternately.)
- Disconnect the USB cable and turn off the printer. Unplug the printer's power cord from the power outlet and contact the appropriate customer support center or service center.

Printer in use

- The printer is in use. Check the printer status.

Printing error

- Cancel printing, disconnect the USB cable and turn off the printer. After a while, turn the printer back on and reconnect the USB cable. Check the printer status.

NOTES

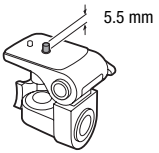
About Canon Inkjet/SELPHY DS Printers: If the printer's error indicator flashes or an error message appears on the printer's operation panel, refer to the printer's instruction manual.

- If you cannot solve the problem even after consulting this list and the printer's instruction manual, contact the closest Canon Service Center (refer to the list included with the printer).

Camcorder

Be sure to observe the following precautions to ensure maximum performance.

- **Save your recordings periodically.** Make sure to transfer your recordings to an external device such as a computer or digital video recorder (📖 105) and save them on a regular basis. This will protect your important recordings in case of damage and create more free space on the memory. Canon shall not be liable for any data loss.
- Do not carry the camcorder by the LCD panel. Be careful when closing the LCD panel. When using a wrist strap, do not allow the camcorder to swing and hit an object.
- Do not leave the camcorder in places subject to high temperatures (like the inside of a car parked under direct sunlight), or high humidity.
- Do not use the camcorder near strong electromagnetic fields such as above TVs, near plasma TVs or mobile phones.
- Do not point the lens at strong light sources. Do not leave the camcorder pointed at a bright subject.
- Do not use or store the camcorder in dusty or sandy places. The camcorder is not waterproof – avoid also water, mud or salt. If any of the above should get into the camcorder it may damage the camcorder and/or the lens.
- Be careful of heat generated by lighting equipment.
- Do not disassemble the camcorder. If the camcorder does not function properly, consult qualified service personnel.
- Handle the camcorder with care. Do not subject the camcorder to shocks or vibration as this may cause damage.
- When mounting the camcorder on a tripod, make sure that the tripod's fastening screw is shorter than 5.5 mm. Using other tripods may damage the camcorder.



- **When recording movies, try to get a calm, stable picture.** Excessive camcorder movement while shooting and extensive use of fast zooms and panning can result in jittery scenes. In extreme cases, the playback of such scenes may result in visually induced motion sickness. If you experience such a reaction, immediately stop the playback and take a rest break as necessary.

Long-term storage

If you do not intend to use the camcorder for a long time, store it in a place free of dust, in low humidity, and at temperatures not higher than 30 °C.

Battery Pack

DANGER!

Treat the battery pack with care.
- Keep it away from fire (or it might explode).
- Do not expose the battery pack to temperature higher than 60 °C. Do not leave it near a heater or inside a car in hot weather.
- Do not try to disassemble or modify it.
- Do not drop it or subject it to shocks.
- Do not get it wet.

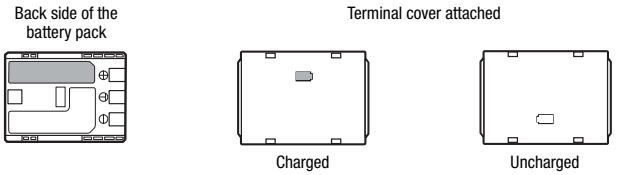
- Attach the terminal cover whenever a battery pack is not in use. Contact with metallic objects may cause a short circuit and damage the battery pack.
- Dirty terminals may cause a poor contact between the battery pack and the camcorder. Wipe the terminals with a soft cloth.

Long-term storage

- Store battery packs in a dry place at temperatures no higher than 30 °C.
- To extend the battery life of the battery pack, discharge it completely before storing it.
- Charge and discharge all your battery packs fully at least once a year.

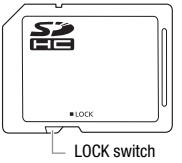
About the battery terminal cover

The battery terminal cover has a [▭]-shaped hole. This is useful when you wish to differentiate between charged and uncharged battery packs.



Memory Card

- We recommend backing up the recordings on the memory card onto your computer. Data may be corrupted or lost due to memory card defects or exposure to static electricity. Canon shall not be liable for lost or corrupted data.
- Do not touch or expose the terminals to dust or dirt.
- Do not use memory cards in places subject to strong magnetic fields.
- Do not leave memory cards in places subject to high humidity and high temperature.
- Do not disassemble, bend, drop, or subject memory cards to shocks and do not expose them to water.
- Check the direction before inserting the memory card. Forcing a memory card into the slot if it is not correctly oriented may damage the memory card or the camcorder.
- Do not attach any labels or stickers on the memory card.
- Secure Digital (SD) memory cards have a physical switch to prevent writing on the card so as to avoid the accidental erasure of the card's content. To write-protect the memory card set the switch to the LOCK position.



Built-in Rechargeable Lithium Battery

The camcorder has a built-in rechargeable lithium battery to keep the date/time and other settings. The built-in lithium battery is recharged while you use the camcorder; however, it will discharge completely if you do not use the camcorder for about 3 months.

To recharge the built-in lithium battery: Connect the compact power adapter to the camcorder and leave it connected for 24 hours with the camcorder off.

Disposal

When you delete movies or initialize the memory, only the file allocation table is altered and stored data is not physically erased. Take the necessary precautions when you dispose of the camcorder or memory card, for example by physically damaging it to prevent the leakage of private data.

If giving the camcorder or memory card to another person, initialize the built-in memory (HFR18/HFR17/HFR16 only) or memory card using the [Complete Initialization] option (📖 36). Fill it up with unimportant recordings, and then initialize it again using the same option. This makes recovering the original recordings very difficult.

Cleaning

Camcorder Body

- Use a soft, dry cloth to clean the camcorder body. Never use chemically treated cloths or volatile solvents such as paint thinner.

Lens and Instant AF Sensor

- If the lens surface or Instant AF sensor is dirty, autofocus may not work properly.
- Remove any dust or dirt particles using a non-aerosol type blower brush.
- Use a clean, soft lens-cleaning cloth to gently wipe the lens. Never use tissue paper.

LCD Screen

- Clean the LCD screen using a clean, soft lens-cleaning cloth.
- Condensation may form on the surface of the screen when the temperature changes suddenly. Wipe it with a soft dry cloth.

Condensation

Moving the camcorder rapidly between hot and cold temperatures may cause condensation (water droplets) to form on its internal surfaces. Stop using the camcorder if condensation is detected. Continued use may damage the camcorder.

Condensation may form in the following cases:

- When the camcorder is moved quickly from cold to warm places
- When the camcorder is left in a humid room
- When a cold room is heated rapidly

To avoid condensation

- Do not expose the camcorder to sudden or extreme changes in temperature.

- Remove the memory card and battery pack. Then, place the camcorder in an airtight plastic bag and let it adjust gradually to temperature changes before removing it from the bag.

When condensation is detected

The camcorder automatically shuts off.
The precise time required for water droplets to evaporate will vary depending on the location and weather conditions. As a general rule, wait for 2 hours before resuming use of the camcorder.

Using the Camcorder Abroad

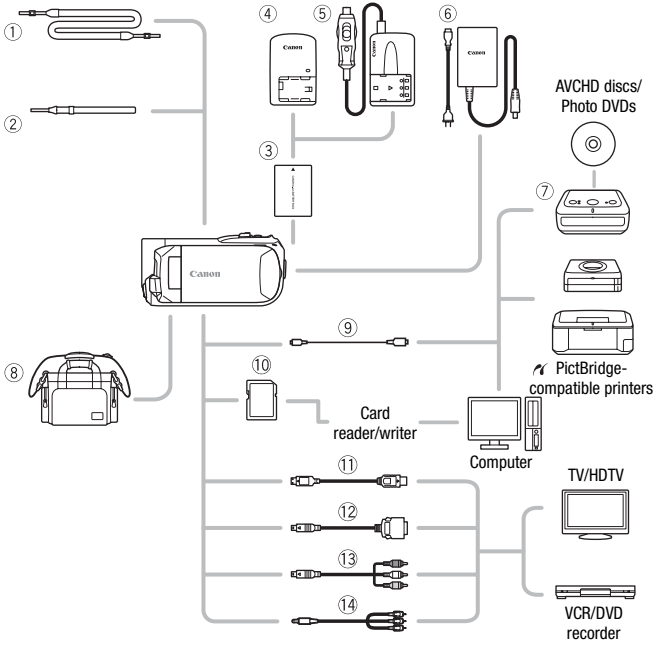
Power Sources

You can use the compact power adapter to operate the camcorder and to charge battery packs in any country with power supply between 100 and 240 V AC, 50/60 Hz. Consult a Canon Service Center for information on plug adapters for overseas use.

Playback on a TV Screen

You can only play back your recordings on TVs compatible with the PAL system. PAL (or the compatible SECAM system) is used in the following regions/countries:
Europe: All of Europe and Russia. **Americas:** Only in Argentina, Brazil, Uruguay and French territories (French Guiana, Guadeloupe, Martinique, etc.). **Asia:** Most of Asia (except in Japan, the Philippines, South Korea, Taiwan and Myanmar). **Africa:** All of Africa and African islands. **Australia/ Oceania:** Australia, New Zealand, Papua New Guinea; most Pacific islands (except for Micronesia, Samoa, Tonga and US territories like Guam and American Samoa).

Accessories (Availability differs from area to area)



Optional accessories not listed below are described in more detail in the following pages.

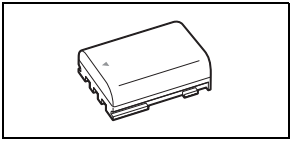
- ① SS-600/SS-650 Shoulder Strap
- ② WS-20 Wrist Strap
- ⑥ CA-590E Compact Power Adapter
- ⑦ DW-100 DVD Burner
- ⑨ IFC-300PCU USB Cable
- ⑩ Memory card
- ⑫ DTC-100 D Terminal Cable
- ⑬ CTC-100 Component Cable
  CTC-100/S Component Cable*
- ⑭ STV-250N Stereo Video Cable**

* Supplied with the camcorder; not available as an optional accessory.
** If necessary, use a commercially available SCART adapter.

Use of genuine Canon accessories is recommended.
This product is designed to achieve excellent performance when used with genuine Canon accessories. Canon shall not be liable for any damage to this product and/or accidents such as fire, etc., caused by the malfunction of non-genuine Canon accessories (e.g., a leakage and/or explosion of a battery pack). Please note that this warranty does not apply to repairs arising out of the malfunction of non-genuine Canon accessories, although you may request such repairs on a chargeable basis.

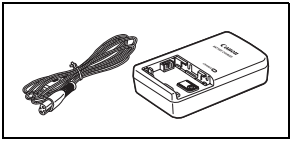
③ Battery Packs

When you need extra battery packs, select the NB-2LH. The supplied BP-2L5 is not available as a separate optional accessory.



④ CB-2LWE Battery Charger

Use the battery charger to charge the battery packs.



Charging Times

The charging times given in the following table are approximate and vary according to charging conditions and initial charge of the battery pack.

Charging conditions	Battery pack	
	BP-2L5	NB-2LH
Using the camcorder	140 min.	150 min.
Using the CB-2LWE Battery Charger	70 min.	105 min.

Recording and Playback Times

Recording and playback times given in the following tables are approximate and vary according to recording mode and charging, recording or playback conditions. The effective usage time of the battery pack may

decrease when recording in cold surroundings, when using the brighter screen settings, etc.

HFR18 / HFR17 / HFR16 Using the built-in memory

Battery pack	Usage time	Recording mode			
		FXP	XP+	SP	LP
BP-2L5	Recording (maximum)	80 min.	85 min.	85 min.	85 min.
	Recording (typical)*	50 min.	50 min.	50 min.	50 min.
	Playback	110 min.	115 min.	115 min.	115 min.
NB-2LH	Recording (maximum)	105 min.	110 min.	110 min.	110 min.
	Recording (typical)*	65 min.	65 min.	65 min.	65 min.
	Playback	145 min.	150 min.	145 min.	145 min.

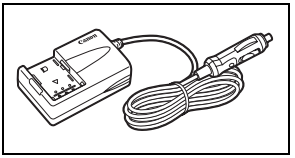
Using a memory card

Battery pack	Usage time	Recording mode			
		FXP	XP+	SP	LP
BP-2L5	Recording (maximum)	80 min.	80 min.	85 min.	85 min.
	Recording (typical)*	50 min.	50 min.	50 min.	50 min.
	Playback	110 min.	110 min.	115 min.	115 min.
NB-2LH	Recording (maximum)	105 min.	105 min.	110 min.	110 min.
	Recording (typical)*	65 min.	65 min.	65 min.	65 min.
	Playback	145 min.	145 min.	150 min.	150 min.

* Approximate times for recording with repeated operations such as start/stop, zooming, and power on/off.

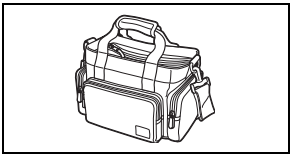
⑤ CBC-NB2 Car Battery Charger

Use the car battery charger to charge battery packs on the go. The car battery charger's cable plugs into your car's cigarette lighter and runs off a 12-24 V DC negative ground battery.



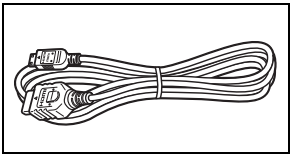
⑧ **SC-2000 Soft Carrying Case**

A handy camcorder bag with padded compartments and plenty of space for accessories.



⑪ **HTC-100 HDMI Cable**

Use this cable to connect the camcorder to an external device using an all-digital connection, allowing you to enjoy playback at the highest quality. This cable sends both video and audio signals.



This mark identifies genuine Canon video accessories. When you use Canon video equipment, we recommend Canon-brand accessories or products bearing the same mark.

LEGRIA HF R18 / LEGRIA HF R17 / LEGRIA HF R16 / LEGRIA HF R106

System

- **Recording System**
  Movies: AVCHD Video compression: MPEG-4 AVC/H.264;
  Audio compression: Dolby Digital 2ch
  Photos: DCF (Design rule for Camera File system), compatible with Exif* Ver. 2.2 and with DPOF**
  Image compression: JPEG (Super Fine, Fine, Normal)
  * This camcorder supports Exif 2.2 (also called "Exif Print"). Exif Print is a standard for enhancing the communication between camcorders and printers. By connecting to an Exif Print-compliant printer, the camcorder's image data at the time of shooting is used and optimized, yielding extremely high quality prints.
  ** Memory card only.
- **Size of Video Recordings**
  FXP mode: 1920x1080 pixels
  XP+, SP, LP mode: 1440x1080 pixels
- **Size of Photos**
  mode: **LW** 1920x1080, **L** 1600x1200, **S** 640x480
  Capturing photos from a playback scene: **LW** 1920x1080 pixels
- **Television System**
  1080/50i*
  * Recordings made with the [PF25] frame rate are converted and recorded on the memory as 50i.
- **Recording Media**
  HFR18 Built-in flash memory, 32 GB
  HFR17 / HFR16 Built-in flash memory, 8 GB
  SD, SDHC (SD High Capacity) or SDXC (SD eXtended Capacity) memory card (not included)
- **Maximum Recording Time (approximate figures)**
  32 GB built-in memory:
  FXP mode: 4 hr. 10 min. **XP+** mode: 5 hr. 45 min.
  SP mode: 9 hr. 35 min. **LP** mode: 12 hr. 15 min.
  8 GB built-in memory:
  FXP mode: 1 hr. **XP+** mode: 1 hr. 25 min.
  SP mode: 2 hr. 20 min. **LP** mode: 3 hr.
  Commercially available 16 GB memory card:
  FXP mode: 2 hr. 5 min. **XP+** mode: 2 hr. 50 min.
  SP mode: 4 hr. 45 min. **LP** mode: 6 hr. 5 min.
- **Image Sensor**
  1/5.5-type CMOS, approx. 2,390,000 pixels

Effective pixels (all figures are approximate values)
Movies: 1,040,000 pixels (optical zoom, [Image Stabilizer] set to [Dynamic])
1,560,000 pixels ([Image Stabilizer] set to [Off] or [Standard])
16:9 photos: 1,560,000 pixels
4:3 photos: 1,730,000 pixels

- **LCD Screen:** 6.7 cm (2.7 in.), wide, TFT color, approx. 112,000 dots
- **Microphone:** Stereo electret condenser microphone
- **Lens**
  f=3-60 mm, F/1.8-3.6, 20x optical zoom
  35 mm equivalent:
  Movies: 49 – 980 mm ([Image Stabilizer] set to [Dynamic])
  40 – 800 mm ([Image Stabilizer] set to [Off] or [Standard])
  16:9 Photos: 40 – 800 mm
  4:3 Photos: 40.2 – 804 mm
- **Lens Configuration:** 10 elements in 8 groups (1 double-sided aspheric element)
- **AF System**
  Autofocus (TTL + external distance sensor when set to [Instant AF]) or Manual focus (for movies only)
- **Minimum Focusing Distance**
  1 m; 1 cm at full wide angle
- **White Balance**
  Auto white balance, custom white balance and preset white balance settings:
  Daylight, Tungsten
- **Minimum Illumination**
  0.4 lx ([Low Light] recording program, Shutter speed at 1/2)
  4 lx ([Programmed AE] recording program, Auto slow shutter [On], Shutter speed at 1/25)
- **Recommended Illumination:** More than 100 lx
- **Image Stabilization:** Electronic ([Dynamic] setting available when recording movies)

Terminals

- **AV OUT Terminal**
  ∅ 3.5 mm minijack; output only
  Video: 1 Vp-p / 75 Ω unbalanced
  Audio: –10 dBV (47 kΩ load) / 3 kΩ or less
- **USB Terminal:** mini-B, USB 2.0 (Hi-Speed USB); output only
- **COMPONENT OUT Terminal (proprietary mini-D terminal)**
  Luminance (Y): 1 Vp-p / 75 Ω; Chrominance (P_B/P_R (C_B/C_R)): ±350 mV / 75 Ω
  1080i (D3) compatible; output only
- **HDMI OUT Terminal**
  HDMI mini connector; output only; compatible with HDMI-CEC and x.v.Colour

Power/Others

- **Power supply (rated)**
  7.4 V DC (battery pack), 8.4 V DC (compact power adapter)
- **Power consumption:** 2.7 W (SP mode, AF on, LCD normal brightness)
- **Operating temperature:** 0 – 40 °C
- **Dimensions [W x H x D] (excluding the grip belt):** 60 x 64 x 124 mm
- **Weight (camcorder body only):** 270 g

CA-590E Compact Power Adapter

• **Power input**	100 – 240 V AC, 50/60 Hz, 0.14 – 0.08 A
• **Rated output**	8.4 V DC, 0.6 A
• **Operating temperature**	0 – 40 °C
• **Dimensions**	46 x 26 x 70 mm
• **Weight**	95 g

BP-2L5 Battery Pack

• **Battery type**	Rechargeable Lithium Ion Battery
• **Rated voltage**	7.4 V DC
• **Operating temperature**	0 - 40 °C
• **Battery capacity**	530 mAh
• **Dimensions**	33.3 x 16.2 x 45.2 mm
• **Weight**	40 g

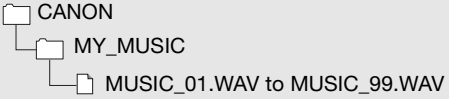
Weight and dimensions are approximate. Errors and omissions excepted.
The information in this manual is verified as of August 2010. Subject to change without notice.

About the music files

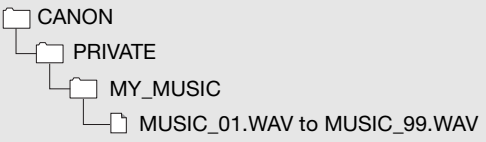
The specifications of the music files compatible with the camcorder are as follows.
Audio encoding: Linear PCM
Audio sampling: 48 kHz, 16 bits, 2 channels
Minimum length: 1 second
File extension: WAV

The music data is saved in the memory under the following folder structure.

HFR18/HFR17/HFR16 In the built-in memory:



On the memory card:



Index

25p Cinema Mode 55

A

Abroad, using the camcorder 161
Aspect ratio of a connected TV (TV type) 130
Audio recording level 66
Auto Backlight Correction 127
Auto slow shutter 127
Autofocus (AF)
  Instant AF/Normal AF 127
AV OUT terminal 100, 102
AVCHD specifications 4

B

Background music 70
Battery pack
  Charging 18
  Remaining charge indicator . .139
Beach (recording program) 54
Built-in backup battery 159

C

Calendar display 47
Camcorder Supplemental Disc 14
Capturing photos from movies 89
Capturing video snapshot scenes from movies 76
Cine Mode (recording program) . . .55
COMPONENT OUT terminal 100, 102
Condensation 160
Connections to external devices 101
Copying*
  Movies 77
  Photos 91

D

Data code 65, 129
Date and time 30
  Date format 134
  Daylight saving time 31
  Time zone 31
Deleting
  Movies 51
  Photos 84
Digital effects 63
Dividing scenes 72
DVD authoring 107

E

Error messages 146
Exposure 58
Eye-Fi card 122

F

Face detection
  Playback 49, 68
  Recording 60
Fireworks (recording program) 54
Flexible recording 24
Focus
  Focus assistance 128
  Manual 59
Frame rate 55, 126
FUNC. menu 28, 123

H

HD to SD conversion 110, 118
HDMI OUT terminal 101
HDMI-CEC 131
Histogram 88

* HFR18 / HFR17 / HFR16 only.

I

Image effects 63
Image stabilizer 127
Index screen 43, 45
Initialization
(built-in memory*/memory card) . 36

J

Joystick 27
Joystick guide 27

L

Language 31
LCD screen 22
LCD screen dimmer 130
Low light (recording program) 54

M

Magnifying photos 86
Maintenance 160
Markers 128
Memory card 32, 158
Microphone attenuator 129

N

Night scene (recording program) . . 54
Notification sounds 131

O

Onscreen display selection 65
Original recordings 73

P

P (recording program) 53
Photo numbers 132
Photo quality 81
Photo size 81
Playback
Movies 43
Photos 83
Playlist 73
Portrait (recording program) 53
Power saving 39
Pre-recording 57
Pre-selecting recordings 50
Print order 97
Printing photos 94
Protecting photos 90

Q

Quick Start function 41

R

Recording
Movies 38
Photos 80
Recording mode 39
Recording programs 55
Recording time 40
Relay Recording* 35
Resetting settings 132
Rotating photos 88

S

Saving recordings 105
Screen icons 136
Searching for scenes with faces . . 49
Searching scenes by date 47
Selecting the memory*
for playback 45
for recording 35
Self timer 57
Serial number 17
Setup menus 29, 126
Slideshow 87
Smart AUTO mode 24
Snow (recording program) 54
Special Scene
(recording programs) 53
Sports (recording program) 54
Spotlight (recording program) 54
Sunset (recording program) 54

* HFR18/HFR17/HFR16 only.

T

Telephoto 40
Time zone/DST 31
Timeline 67
Transferring recordings to a computer 105
Tripod 156
Troubleshooting 140

U

Uploading movies to video sharing sites 117
USB terminal 100, 103

V

Video snapshot 56
Volume 43, 130

W

White balance 61
Wide angle 40
Wind screen 128

Z

Zoom 40
Digital zoom 126
Zoom speed 40, 126

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